# Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves
PUBLISHED WEEKLY BY TELEPHONY PUBLISHING CORPORATION
608 S. Dearborn Street, CHICAGO, Telephone Wabash 8604

H. D. FARGO, PRESIDENT AND TREASURER
S. R. EDWARDS, EDITOR AND SECRETARY
H. D. FARGO, JR., VICE-PRESIDENT AND ADVERTISING MANAGER
D. C. SORENSEN, WESTERN ADVERTISING MANAGER

Entered as second-class matter September 4, 1908, at the postoffice at Chicago, Ill., under act of March 3, 1879.

Volume 103
Number 20

CHICAGO, SATURDAY, NOVEMBER 12, 1932

Subscription — 10 Cents a Copy
$3 a Year, U. S., Cuba and Mexico
$4 Canada, $5 Other Countries


## TELEPHONE MEN LOOKING FORWARD; A STUDY OF STATION LOSSES

In the exchange of ideas and plans at the two group meetings at Columbus and Des Moines last month, the dominant note prevailing was that the telephone industry is looking forward with undiminished hope and with an assurance of further progress.

There was a definite ring of courage in the proceedings, and a sturdy demonstration of faith that the telephone business will overcome the evil spirits of depression, thanks to that remedy of "hard work" with which telephone men are so familiar.

Company executives are busy planning to regain the losses that—as in all lines of business—have reduced their revenues during the last three years. And they are confident of success. They know that improving business conditions will eventually re-instate the lost stations, but they are not waiting for that to "just happen." They are preparing aggressive sales campaigns to speed up the return of telephone business, and confidently expect the comeback will reward their efforts in the near future.

* * * *

Since the hard times began in 1929 there have been some concerns in most lines of industry that kept out of the red and even showed a gain in business. The economists and financial experts who have noted this have commented on it with surprise.

Most of these exceptions have been found to be smaller enterprises which were able to trim their sails quickly and adapt their operations to new conditions. In this particular the smaller concerns had a big advantage over the big organizations whose immense overhead and unwieldly methods—geared only to boom times—hampered their movements.

The average locally-owned telephone company possesses these same advantages and—aside from the admitted advantage the telephone industry has over general lines of business—this is one of the reasons why it has come safely through the depression. Economy and hard work have been the watchwords of local telephone companies for so many years that they did not have to learn new methods along these lines when the pinch came in 1929. These Spartan habits have stood them in good stead during the last three years, and enabled them to come through the ordeal with few casualties.

* * * *

Under these conditions, therefore, they are in shape to go ahead and take advantage of the opportunity offered by the returning demand for telephone service that will come with general business recovery.

By losing no time in putting their plants in good shape, training employes as service salesmen and utilizing as by-products every activity that has to do with communication, telephone companies—to borrow President Hoover's apt phrase—already have "carried the first line trenches in this fight against depression."

The fundamental stability of the telephone business is a guaranty that it will increase in volume as general conditions improve. The wisely-managed companies will put their plants in shape to profit by economic recovery.

**Studying Station Losses.**

In the course of an investigation into revenue losses caused by telephone disconnections, a utility commission in one of the Middle Western states made a study of six selected exchanges which developed some interesting information. The data analyzed were: Number of stations in service on January 1, 1931; percentage of loss up to June 1, 1932, access to other stations, standard of maintenance, average calls per telephone per day, promptness of repairs and the party line rates.

Example No. 1 (an exchange with 231 stations January 1, 1931, with a rate of $2) showed a loss of 64 per cent in stations up to June 1, 1932, "fair" maintenance, daily calls per telephone, three, and a promptness of repairs given as 46 per cent—"trouble cleared the same day."

In example No. 2 (an exchange with 625 stations on January 1, 1931, having a rate of $1) there was a loss of only 7 per cent by June 1, 1932; "good" maintenance, calls per day, four, and a promptness of repairs described as 93 per cent of troubles cleared the same day.

* * * *

The difference in the rates of these two exchanges accounts for the larger loss sustained by the first case cited, inasmuch as

both exchanges were situated in adjacent territory, so that the subscribers could make comparisons. Those paying the $2 rate knew of the lower rate prevailing among their neighbors, and many of them had this in mind when they ordered out their telephones.

At the same time, the fact that the second exchange had made repairs so promptly that it handled 93 per cent the same day they were reported, while the first exchange had a record for promptness of only 46 per cent, might easily account for the former's better showing in disconnects.

Experience shows that subscribers are quick to appreciate prompt action on the part of the company in making repairs and clearing up service trouble. Delay means dissatisfaction and leads to loss of customers.

The same record showed that 22 per cent of the repairs made by the first exchange came after three days' delay, while with the other exchange only 2 per cent of the troubles cleared had to wait that long.

* * * *

In case No. 3 (an exchange with 185 telephones, having a rate of $1.50) there was a loss of 58 per cent in stations in the 17 months to June 1, 1932, "fair" maintenance, average daily calls per telephone, two, and a promptness of repairs of 61 per cent, troubles cleared the same day.

Case No. 4 (an exchange with 130 telephones, having a rate of $1.25) showed a loss of only 8 per cent, daily average calls per telephone, two, and a promptness of repairs given as 52 per cent of troubles cleared the same day.

Another example referred to an exchange with 1,029 stations, having a rate of $1.50, which showed a loss of 12 per cent in telephones, average daily calls per station, 3½, and a promptness of repairs of 76 per cent, troubles cleared the same day.

* * * *

Telephone men who have studied this report, say it strongly tends to prove that where service is satisfactory and the company is prompt in making repairs and straightening out the kinks and troubles that occur, the subscribers use and appreciate the service, and station losses are noticeably less. Of course, many other factors enter into the different situations. The economic condition of the people living in the service area has an important bearing on whether the percentage of station losses is high or low.

Generally speaking, the small differences in the rates that may exist do not materially influence the decision to cancel the service. If the service is satisfactory, and the company's public relations properly protected, the question of rates is seldom the determining factor.

Prompt attention to necessary repairs and a constant endeavor to convince the public of the company's desire to meet their requirements create more good will than would a small reduction in rates, especially if the company is obliged to make up the loss by scrimping the service in other directions.

* * * *

In commenting on this phase of the situation, the secretary of one state telephone association says:

"As a matter of fact, the highest percentage of station losses appears to be where the rates have been the lowest. Then the question is: 'Is it the physical condition of plant due to low rates, unreliable service due to constant interruptions on account of repairs not made promptly?'"

His advice to operating companies follows: "Analyze your own property. What is your calling rate per day per telephone? This will give you the answer as to the use of your service. Satisfy yourself.

"Check over your records of five or six lines for the past two years, on lines where you have lost several stations. How many interruptions of service? Were repairs made the same day they were reported? Did these subscribers you have lost have reliable service?

"Yes, we realize the economic conditions, but there are lots of things that have been charged to these same economic conditions that really belong in another column."

# The Telephone Depreciation Charges

## Interstate Commerce Commission's Order No. 14700 on Depreciation Charges of Companies—Discussion of Questions on Order and Preparation of Information to be Submitted—Address at Columbus Meeting of National Association

By A. B. Greene,

*Telephone Engineer, Florida Railroad Commission, Tallahassee, Fla.*

The Interstate Commerce Commission's final report, and the accompanying order, dated July, 1931, on depreciation charges of telephone companies, is a remarkable document. It is the summing up in a clear, compelling, logical order of the facts brought out on the witness stand at hearings held in Washington, D. C.

This document is remarkable in that it has reviewed and simplified the testimony of experts testifying on a highly technical subject of which, until the time of the inquiry, very little was known. This inquiry has been carried out by Commissioner Eastman in a very able manner, and the telephone industry is indebted to him for his great patience and untiring efforts in undertaking an inquiry of such magnitude and of such far-reaching consequences, and too, with such fairness to all.

The presentation about to follow deals with some of the questions which were brought out at the Interstate Commerce Commission hearings and also with questions relating to the preparation of information to be submitted by the companies to the Interstate Commerce Commission.

Depreciation practice covers a wide field both in accounting and engineering; and one can hardly deal with a subject of this kind without at times encountering technicalities of a rather complicated character. After all, difficulties do not remain difficulties very long for when we focus our attention on a subject the subconscious mind begins to busy itself immediately; and very soon we find what was once difficult and hard to understand, has become simple and commonplace. Then we wonder why we were so overawed on first acquaintance.

The inquiry on depreciation instituted by the Interstate Commerce Commission has been of an educational character; there are many engineers, accountants, executives and lawyers who today are better informed on the subject of depreciation than ever before.

The same thing could be said of account-

ing practice, some years ago when the income tax law went into effect. Up to that time the principles of accounting were understood by only a chosen few. In a short time after the statute was in effect, many individuals had realized that it was imperative for them to become acquainted with a working knowledge of the principles of accounting. The knowledge acquired was no burden for them to carry, but rather enabled them to put their houses in order and to effect certain improvements in their practice of routine business—and so it will be in the present instance.

The work to analyze the accounts and records so that the depreciation order of the Interstate Commerce Commission may be carried out, will result in a broader knowledge of plant conditions and the economics relating to the business. Better financing arrangements can be made when a clear-cut statement showing the depreciation reserve in its relation to the fixed capital account, and the understanding that such reserve has received the approval of the Interstate Commerce Commission will make it much easier for the banker who is interested in the financing program.

We shall now open our review of the subject by first taking a glance at the depreciation order putting it in a somewhat condensed form.

The order in condensed form is as follows:

1. Classification of depreciable property according to following classification:
   Right of way.
   Buildings.
   Central office telephone equipment.
   Other equipment of central offices.
   Station apparatus.
   Private branch exchanges.
   Booths and special fittings.
   Exchange pole lines.
   Exchange aerial cable.
   Exchange aerial wire (exclusive of drop wires which extend from the general overhead system to the point of entrance to the subscriber's building).
   Exchange underground conduits.
   Exchange underground cable.
   Exchange submarine cable.
   Toll pole lines.
   Toll aerial cable.
   Toll aerial wire.
   Toll underground conduit.
   Toll underground cable.
   Toll submarine cable.
   Office furniture and fixtures.
   General shop equipment.
   General store equipment.
   General stable and garage equipment.
   General tools and implements.
2. Depreciation accounting — charging expenses, crediting reserve, and the procedure in retiring property.
3. Annual depreciation charges computed at such percentage of ledger value—as to distribute service value under straight-line method.
4. For corporate purposes, depreciation reserve shall be regarded and treated as single composite reserve, but for purposes of analysis subsidiary records shall be maintained, in which the reserve will be shown as resolved into component parts corresponding to primary accounts.
5. The monthly depreciation charges to operating expense shall consist of a composite annual percentage rate used for each primary account; these rates to be prescribed by the Interstate Commerce Commission from time to time. The composite percentage rates shall be based upon estimated service lives developed by a study of the company's history and experience, and such engineering and other information as may be available.
6. Retirement of a unit of depreciable property. Whether or not causes of retirement are a recognized factor, service value shall be charged in its entirety. If retirement is due to loss covered by insurance, the reserve shall be credited with full amount of insurance recovered; if the loss is not covered by insurance and the charge to reserve will result in its undue depletion, then under permission of the Interstate Commerce Commission a charge to an appropriate suspense account may be made.
7. Companies that have not yet distributed investment in fixed capital to various primary accounts are required to do so.
8. An estimate shall be made of the amount of accrued depreciation to be broken down into component parts corresponding to primary fixed capital accounts.
9. A record shall be kept of property retirements which shall reflect service life and percentage of salvage value or net salvage.

On page 431 of the report of the Interstate Commerce Commission are given the following definitions of terms in its finding No. 2. We further find:

That the term "service life" shall be construed to mean the period of time between the installation of the unit in question and the retirement for accounting purposes.

That the term "salvage value" shall be construed to mean the amount received for property retired and disposed of, or the amount at which the material recovered will be charged if reused.

That the term "net salvage value" shall be construed to mean the salvage value of the property retired less the cost of removing it and recovering the salvage.

That the term "service value" shall be construed to mean the difference between the ledger value of the unit and its salvage value in the case of railroad property and telephone station apparatus, and the difference between the ledger value of the unit and its net salvage value in the case of all other telephone property.

That the total expense of depreciation in connection with any unit of property is its service value as above defined.

On page 408 of the order, the Interstate Commerce Commission gives the definition of the straight-line method.

Under the straight-line method the annual depreciation charge is obtained by dividing the estimated service value by the number of years of estimated service life.

In presenting this testimony before the Interstate Commerce Commission, the American Telephone & Telegraph Co. submitted as one of its exhibits, a grouping of the 24 classes of depreciable property already mentioned, into four groups. The grouping is a logical separation of the classes of plant indicated by the nature of the kind of units and the methods of determining the average lives. It is a convenient classification; one which may easily be memorized, and one which will be found very helpful in making depreciation studies. The grouping is as follows:

The classes of property which come under the heading of group 1 are:

Exchange right of way.
Toll right of way.
Toll aerial cable.
Toll underground cable.
Exchange underground conduit.
Toll underground conduit.
Exchange submarine cable.
Toll submarine cable.
General shop equipment.

The experience and data for classes of property in this group are not sufficient to permit of direct application of methods of calculation, so that estimates of rates of depreciation will be based upon judgment and experience which will have for a background such experience or data that may be found in classes of plant having similar characteristics. However, as experience accumulates for any class of property in this group to the point where methods of computation may be used, such classes will eventually be placed in the group most suitable.

Group 2:

Buildings.
Central office telephone equipment.

These classes are treated separately because of the fact that they are few in number, large units having individual characteristics and consisting of integral parts of a very complex character. The study of this class of property is that of estimating remaining life.

Group 3:

Other equipment of central office.
Station apparatus.
Booths and special fittings.
Exchange aerial wire.
Toll aerial wire.
Office furniture and fixtures.
General store equipment.
General tools and implements.

Each class of property in this group is studied as a whole; that is, no attempt is made to label each unit in its particular class, and to record its individual characteristics. Operating requirements do not call for such detailed records to be kept, so that the accounting records, showing amount of plant placed and plant retired, furnish the data that is used to determine the average service life, employing what is known as the "turnover" method for that purpose.

Group 4:

Private branch exchange.
Exchange pole line.
Exchange aerial cable.
Exchange underground cable.
Toll pole line.
General stable and garage equipment.

This group is distinguished from group 3 by the fact that the records give information as to location, date of placing and date of retirement of each of the principal items of plant. The accumulating of mortality data, which with the classes of property in this group is possible, provides a means for the application of actuarial methods in deriving the average service lives.

Before we attempt, however, to make a study of our data in order to develop the average service life for each class of depreciable property, it is quite important that we set up a line of cleavage between the expense occasioned by the using up of physical property employed as fixed capital and that other expense occasioned by keeping such physical property in fit condition during its service life.

This distinction is well emphasized in the memorandum of conference found on page 484 of the Interstate Commerce Commission's order, appendix D, generally referred to as "the stipulation." This memorandum gives a list of units of depreciable property and removes all doubt as to classification of depreciation and maintenance expenses.

That figure which denotes average service life, is a composite figure and is the resultant of many factors operating on the element of property which it represents. Average service life is an estimate, the accuracy of which depends upon the reliability of the date employed.

There are many forces in operation which singly or jointly have their effect upon the service life and because of this inter-action on one another, the attempt to segregate these forces for the purpose of analysis showing the dominating factor or factors underlying such service lives would be attended with very uncertain results. The following table is a classification of some of the principal forces operating as the cause of depreciation of telephone property:

| Cause | Effect |
|---|---|
| Action of elements | Rot, rust, decay |
| Organic agencies | Rot, rust, decay |
| Use in operation | Wear and tear |
| Injury | Wear and tear |
| Storm and casualties | Wear and tear |
| Improvements in the art | Obsolescense |
| Growth of communities | Inadequacy |
| More intensive service | Inadequacy |
| Fires | Damage |
| Advancing social standards | Public requirements |
| Public convenience | Public requirements |

The factor of salvage is a component of the depreciation rate which must be reckoned with.

Taking the service values as defined in finding No. 2 of the Interstate Commerce Commission's order, which has already been referred to, the depreciation rate for each class of property will be the book cost or ledger value less net salvage, divided by average service life.

Net salvage is the amount of salvage recovered after deducting the cost of removal or retirement, and the per cent of net salvage is that amount expressed as per cent of book cost.

The question has probably been asked many times as to what form telephone companies should file their statements of depreciation studies with the Interstate Commerce Commission in compliance with the requirements of the order.

Finding No. 7 on page 445 of the order leaves no doubt as to how the order shall be carried out. This finding reads in the order as follows:

We find that the percentages of depreciation which shall be charged by steam railroad companies and telephone companies with respect to each primary account of depreciable property shall be determined as follows:

Each such company shall estimate the percentage of depreciation which it deems applicable to the ledger value of each such primary account, such percentages being based upon service values and service lives, as hereinbefore defined, developed by a study of the company's history and experience and such information as may be available with respect to future prospects. In each case such estimates shall be accompanied by sworn statements showing the basis therefore and the methods employed.

In the case of steam railroad companies, such estimates and the accompanying statements shall be filed with the commission within the time prescribed in the order hereinafter entered.

In the case of telephone companies, such estimates and the accompanying statements shall be filed, within the time prescribed, with the state commission or commissions having jurisdiction over the particular company, except that where no state commission has jurisdiction or is willing to act in the premises, they shall be filed with this commission.

In the case of steam railroad companies, this commission shall, after an office check, prescribe by temporary order the percentages of depreciation which shall be charged with respect to each class of property of each company; and in the case of telephone companies this commission shall by temporary order prescribe similar depreciation percentages, following the recommendations of the state commission to the extent that such advice can be procured.

After the issuance of the temporary orders, opportunity shall be afforded at public hearings, if desired, for the presentation of evidence by all interested parties with a view to the modification of such orders, and for the submission to this commission of views based on such evidence.

In the case of telephone companies, such public hearings shall be conducted for this commission, so far as possible, by state commissions.

In laying down the rules to be followed, the Interstate Commerce Commission has not hampered the telephone companies with any iron-bound routine in developing the rates of depreciation, but, on the contrary counsels them to work out the problems in a manner which is consistent with common sense.

In the paragraph following finding No. 7, on page 446, the Interstate Commerce Commission has shown its wisdom in suggesting to the companies how their problems may be approached. We should, indeed, keep before us the valuable suggestions given herein:

In the ascertainment of proper depreciation percentages and rates the keeping of adequate records of past experiences and sound methods of analysis are matters of essential importance. It has been suggested that we ought to prescribe the form of such records and appropriate methods of analysis.

This is a matter which must be determined by experience and conference with the companies and the state commissions, and other interested parties. It can hardly be determined to advantage in this report, in the light merely of the present record.

It will be the task, therefore, of the telephone companies to develop a form of statement in which the information required by the order of the Interstate Commerce Commission can be furnished. It would appear that such task could easily be assigned to the engineering and accounting committees of the telephone association.

In planning such forms their general design should be so as to conform to certain requirements as suggested by the chief of the depreciation section some time ago. The presentation as suggested contemplates four schedules, and the information to be given in these schedules will cover the requirements of the order. The following is taken in part from the statement outlining the four schedules just referred to:

In the application of the finding (No. 7) a schedule of property by primary accounts which can be directly connected with the investment accounts must be prepared; that as to each primary account there must be shown the composite rates applicable thereto; and that the latter must be supported by appropriate data concerning service lives, salvage values, cost of removal, etc. Statements should, therefore, be submitted in substance as follows:

(1) A schedule showing by primary accounts the amount of depreciable property included in the fixed capital accounts with a column showing percentage rates proposed for application to each such primary account. For convenience this schedule might properly show also the investment included in each non-depreciable account, so as to provide a total which will agree with the ledger.

(2) A separate schedule for each primary depreciable account, in the nature of an analysis of the general information shown on schedule 1 showing for each of the different homogeneous groups within the particular primary account, the ledger value, service life, net salvage value per cent, total service value and annual loss, together with the total of the primary account so that the sum of the annual service loss for all the homogeneous groups within a particular primary account may be related to the total ledger value of such primary account, thus producing the composite rate.

(3) A schedule in the nature of a summary of the principal homogeneous groups of depreciable property (for instance, the

various types of buildings, such as those constituted of brick, cement, wood, etc.) operated by the carrier, irrespective of the primary account in which the cost is included, and showing for each such homogeneous group the average service life and percentage of net salvage used in computing the composite rates for the various primary accounts.

Where a different service life is found proper for the same class of property in different localities or used for different purposes, the property in each different locality or different use, might reasonably be considered a separate factor in the composite rate in exactly the same manner that a brick building might be treated as a separate class of property from a frame building.

(4) Separate statements for each homogeneous group of property to support the summary of information given in schedule 3, in which shall appear a concise statement regarding the data upon which are based the estimates of average service life and net salvage value, such as (a) the extent to which the estimates are based upon experience table prepared by the carrier; (b) the extent to which they are based upon the judgment of the carrier's engineering or other department; and (c) the extent to which they are based upon outside information, indicating the source and character thereof. All of this data would in turn be supported by the necessary statements of detail information.

In classifying the property included in the primary accounts, by homogeneous groups, for the purpose of developing the composite rate, it is not intended that there shall be any undue refinement. In other words, where it would not be practicable to make separate groups of homogeneous minor structures, they might be grouped together or included with other groups of the more important structures unless in instances where such treatment would tend to seriously distort the percentage rate otherwise applicable.

It is suggested that the form for these schedules be prepared on letter size, 10½ ins. by 8 ins.

There are two classes of telephone property—buildings and central office switchboards—which are studied individually when a determination of the service lives are required. The growth in the population of the area served, and the forecast as to requirements based on the population growth at some future time, are the factors to be reckoned with.

How long will the existing building and the central office equipment adequately serve the community before the capacity of the building is used up?

The answer to this question is based on the maximum volume of traffic which can be handled on a switchboard occupying the ultimate capacity of the building and at the same time furnishing the established high-grade quality of service.

Central office facilities are engineered so as to provide existing requirements plus a certain margin to take care of growth for a period of from two to three years. For this reason, the switchboard consists of a growing structure, comprised of the original installation plus the additions made from time to time.

## Actions of a Real Man.

**An educated man cultivates the open mind, never laughs at new ideas; knows the secret of getting along with other people; cultivates the habit of success; knows as a man thinketh, so is he; knows popular notions are always wrong; always listens to the man who knows; links himself with a great cause; builds an ambition picture to fit his abilities; keeps busy at his highest natural level; knows it is never too late to learn; never loses faith in the man he might have been; achieves the masteries that make him a world citizen and lives a great religious life.**—William H. Danforth.

The average amount of plant in service any year is the amount of plant in service the first of the year plus the amount of plant at the end of the year, divided by two. Accumulating the amounts so derived year by year gives dollar years accumulated; and this amount divided by the amount representing the total equipment installed to date, gives the average realized life of equipment at end of year.

The original installation and the additions made from time to time have a common date of retirement. Curves have been developed showing the relationship between the age of initial installation and the average realized life.

The forecast study which reveals overall age, taking into account the estimated gross additions and the estimated dollar years to the end of the study, gives the clue as to the determination of average life realized, upon which is based the estimated rate of depreciation; of course giving due regard to the estimated net salvage. Compensating adjustments should be made for fluctation in the cost levels, reducing all amounts representing additions to a common level with the original installation.

The building, which is the container, so to speak, is designed so that by making additions from time to time—provided, of course, land is available for extensions—it will accommodate the switchboard planned for its maximum capacity; that is, the capacity which has already been estimated by the engineer in his forecast study.

In working out the depreciation rates for buildings, the process is similar to that employed for switchboards, additions being made to buildings at intervals of eight to ten years.

The data employed for making turnover studies is taken directly from the accounting records. The initial summary must give for the class of plant under consideration the following data, shown yearly from the earliest date of record to the most recent:

(1) Amount of plant in service at beginning of year.

(2) Amount of plant placed during year.

(3) Amount of plant retired during year.

The method of determining the length of the turnover period is very simple. It is to accumulate the retirements year by year backwards from the most recent year used as starting point, until the amounts so accumulated approximate as nearly as possible the amount of plant in service on a previous year.

The turnover period may also be determined by accumulating the amounts of plant placed year by year until the total so accumulated is equivalent, or nearly so, to the amount of plant in service at the most recent date. The retirement method is generally employed, but there are cases in which the latter method is used, reference to which will be made later on.

It should be remembered that the data employed in arriving at the turnover period has written into it all the experiences of its past history, early and late, in the period under study. Influences appearing in the early stages of the life having ceased to exist, must still give color to the results of the turnover study.

But before the turnover study may be used in arriving at a figure representing average service life, certain modifications are necessary:

First, there must be a correction applied for differences in cost levels for the years covering the period of study. This correction is made by adjusting the cost index for each year during the period to a common level—putting, as it were, all items on one floor; those on the floor above are moved down, and on the floor below are moved up. Having levelled the accounting data on this basis, a further correction is required to compensate for rate of growth of the class of plant in question.

In a plant which has reached a stage of stability, both as to size and age distribution of its units, at least within the limits of the turnover period, the average life of the units and the length of the turnover period will be found to coincide.

This is due to the symmetrical distribution about the average, of the units retired at ages less than the average and units retired at ages greater than the average. Under such conditions there would be retirements equally distributed on either side of the average, the result being that the average age of the units retired within the turnover period would be the same as the average life of the units.

With a growing plant, however, the symmetrical distribution of retirements does not exist, due to the larger number of units retired at ages less than the average life than those retired at ages greater than the average life. This, of course, results in a lower average age of the units retired than their average life. In order to offset this difference, there must be found a com-

pensating figure which, added to the turnover period, will give the true average life.

It can be readily seen from a consideration of the effect growth of plant has upon the average age of retirement that the age of distribution of units of plant throughout its life plays an important role. Any compensating factor, therefore, to be applied in offsetting the influence of growth upon the turnover period must take into account both rate of growth and age distribution.

| Year of Installation (1) | Gross Additions 10 Per Cent Growth (2) | Plant Remaining at End of 1930 Per Cent of Amount Placed* (3) | Plant Remaining at End of 1930 Amount (2) Times (3) (4) | Accumulated Gross Additions, Column 2 (Accumulated) (5) |
|---|---|---|---|---|
| 1930 | $100,000 | 99.4 | $ 99,400 | $100,000 |
| 1929 | 90,909 | 97.9 | 88,999 | 190,909 |
| 1928 | 82,644 | 95.6 | 79,007 | 273,553 |
| 1927 | 75,131 | 92.2 | 69,271 | 348,684 |
| 1926 | 68,301 | 87.1 | 59,490 | 416,985 |
| 1925 | 62,092 | 79.4 | 49,301 | 479,077 |
| 1924 | 56,449 | 71.0 | 40,079 | 535,526 |
| 1923 | 51,316 | 62.0 | 31,816 | 586,842 |
| 1922 | 46,650 | 53.0 | 24,724 | 633,492 |
| 1921 | 42,410 | 44.1 | 18,703 | |
| 1920 | 38,554 | 36.4 | 14,033 | |
| 1919 | 35,051 | 29.4 | 10,305 | |
| 1918 | 31,864 | 23.4 | 7,456 | |
| 1917 | 28,967 | 18.4 | 5,329 | |
| 1916 | 26,334 | 14.3 | 3,766 | |
| 1915 | 23,941 | 11.2 | 2,681 | |
| 1914 | 21,764 | 8.5 | 1,850 | |
| 1913 | 19,785 | 6.6 | 1,305 | |
| 1912 | 17,986 | 4.9 | 881 | |
| 1911 | 16,351 | 3.5 | 572 | |
| 1910 | 14,865 | 2.4 | 357 | |
| 1909 | 13,513 | 1.6 | 216 | |
| 1908 | 12,285 | 0.9 | 111 | |
| 1907 | 11,168 | 0.6 | 67 | |
| 1906 | 10,106 | 0.3 | 30 | |
| Total plant in service 1930..... | | | $609,749 | |

*See life table 25-1, Bulletin 103, Iowa State College.

**Table Showing Determination of Effect of Growth on Turnover Period.**

Rate of growth is easily determined by plotting the amounts of plant in service at the beginning of each year on semi-logarithmic cross-section paper. The slope of the straight line which is drawn as closely as possible through the plotted points, gives the rate of growth. The ratio of any two consecutive readings taken one year apart on this line gives the required rate per cent.

Having the rate of growth and having smoothed out the wrinkles in the accounting data for irregularities in price levels, the next step is to calculate the effect of growth on the turnover period. Here we must give attention to some theoretical considerations. We assume a plant growing at the rate required and that a stable age distribution exists. We select a life table for the study whose distribution of retirements will approximate as closely as can be judged those of the case under study.

The accompanying table illustrates the manner in which this calculation is made. The distribution of retirements are over the whole life span. The year indicated on the first line of column 1 is the end of the accumulation period in the turnover study.

Column 2 shows the gross additions to plant each year. The amount of plant placed in the most recent year, for convenience in calculation, is assumed to be $100,000. A uniform rate of growth of 10 per cent is taken. Therefore, the figures in this column are taken from a table of present worths, with an interest rate equal to that of the rate of growth.

The percentages in column 3 are those taken from the selected life table. They show the percentage of the plant placed in each year, which survives until the end of the year 1930. The entries in column 4 are the products of columns 2 and 3, and show the distribution by ages of all the plant at the end of 1930.

The total column 4 is the total plant in service as of 1930. The turnover period is the number of years required for the gross additions, working down from 1930 and accumulated to an amount equal to the total plant in service at that date.

Column 5 shows the gross additions accumulated from column 2 until the total exceeds the total plant in service, which in this case amounts to $608,952.

The accumulation of gross additions for eight years is $586,842, and for nine years is $633,492. The turnover period is therefore, between eight and nine years, or 8.491 years by interpolation; in other words, the average life is 0.809 years longer than the turnover period.

It will be seen from a study of this example that success in a turnover study, where the factor of growth is present, depends upon the proper selection of the life table to be used.

It is of great importance that telephone companies realize the necessity of providing themselves with records from which life tables may be worked up to form the basis of the turnover studies. All available plant records should be combed over carefully with this end in view.

There is available very reliable information as to the preparation of life tables. The engineering experiment station of the Iowa State College, Ames, Iowa, has issued a very instructive bulletin, No. 103, entitled "Life Characteristics of Physical Property," and Professor Edwin B. Kurtz of the same college has written a book entitled, "Life Expectancy of Physical Property." This is published by Ronald & Co. and is a veritable mine of information on the subject of life tables.

There are three general types of frequency curves shown in the bulletin referred to. The curves show "spread" of age distribution on either side of the average age, the types being classified as follows:

(1) Mode to left of average.
(2) Mode coincident with average.
(3) Mode to right of average.

The mode is the term used by statisticians to represent the point of maximum frequency on the curves. The study of these curves will assist in selecting the life curve most suitable in the compilation of correction factor for the turnover period.

While the turnover method may be employed for determining the average service lives of all classes of telephone property with the exception of buildings and switchboards, yet there are some classes which are amenable to a more accurate determination of the average service life.

These classes of telephone property, as previously noted, are shown under group 4, the distinguishing feature being that each class in the group furnishes definite information as to location, date of placing and date of retirement of each of the principal items of plant.

As the result of untiring research carried out by the technical staff of the American Telephone & Telegraph Co., it has been proved that the methods of actuarial analysis employed by insurance companies in constructing life tables is found for all practicable purposes to apply in the study of classes of physical property where retirement experience has been recorded.

A group of units of property of a given class, for which there is a record of the retirement experience, year by year, from the time the group has been placed in service up to some recent year chosen as end of period of study, furnishes the basis upon which a life table for the group may be

constructed. Taking the units of plant installed on successive years, showing retirement experience in the same fashion will give a series of such tables, each one of which will be one year shorter than the preceding table.

In constructing life tables from such calculations, we have our choice of taking all the data together and including the total experience of the period, which for example we will say is 25 years; or we may take the last two or three years of each group of plant placed year by year, and from that experience develop a life table. Taking the two or three years' experience of units of each age group furnishes the means of constructing a life table which contains only the experience as reflected in the years chosen, the influence of conditions present in the early life of the groups being eliminated. A study of this kind is known as "Band Analysis."

The life experience may be complete or incomplete. If complete, by an easy arithmetical process, the average service life may be computed. On the other hand, with incomplete experience we are unable to determine the service life unless a means is provided to extend the life table to the end of the cycle.

Life tables are shown in graphical form. The per cent of plant remaining in service is plotted against age. In plotting a curve from the raw data, the graph is generally irregular in form, and a smoothing process as well as a projection of the curve in the event of incomplete experience data is necessary.

This brings us to a consideration of the methods employed by insurance actuaries, by which an accurate smoothing of irregular life curves may be effected, or a projection of an incomplete table be made.

It has been found that life tables, whether relating to human beings or physical property, can accurately be described by a mathematical equation whose constants are separately determined from the observed data for each life table. This equation has been employed very successfully by insurance actuaries for over a century. In its present form it is known to actuaries as the Gompertz-Makeham formula.

The history of the origin of this formula is of particular interest. It deals with the problems which faced the actuaries in the early days of the life insurance companies and gives an account of the efforts which were made to develop a satisfactory means of working out life tables.

In the early days of life insurance, when mortality tables were few in number, there was felt the necessity to discover some mathematical law relating to mortality rates by means of which values of premiums could easily be calculated. The methods of computing tables in that time were very crude, so that anything which might save time and labor was very acceptable.

About this time, DeMoivre became interested in the problem. He conceived the hypothesis of equal decrements to human life. He did not hold that a decreasing arithmetical series was a correct representation of a life table; but upon studying carefully all the tables then at his command he came to the conclusion that he could assume the values for remaining life series to diminish by a constant common difference. DeMoivre in his "Treatise of Annuities on Lives" in the year 1725 said:

The hypothesis consists in supposing that the number of lives existing at any age is proportional to the number of years intercepted between the age given and the extremity of old age. We may consider that whatever be that law which is observed by Nature in a perpetual decrement of human life, that law must, conformably to all the other laws of Nature, be such as to proceed regularly, at least for some short intervals of time.

The basic idea of the DeMoivre hypothesis was that the number of deaths is constant. It was very evident, however, that DeMoivre had not solved the problem, but he had directed the attention of enquiring minds along the right lines. The quest after the law of human mortality kept right on. It was again the urge to delve into the secrets of nature.

One hundred years later, in the year 1925, Benjamin Gompertz contributed a paper to the Royal Society in which he discussed what would be the effects of assuming the numbers living at successive ages to be in geometrical progression. Gompertz said in this paper:

"It is possible that death may be the consequences of two generally co-existing causes; the one, chance, without previous disposition to death or deterioration; the other, a deterioration, or increased inability to withstand destruction."

But in working out the law mathematically, Gompertz gave only consideration to the second cause, namely a "deterioration of increased inability to withstand destruction." Commenting on the equation he developed on this hypothesis, Gompertz remarked:

This equation between the number living and the age, becomes deserving of attention not in consequence of its hypothetical deduction, which in fact is congruous with many natural effects as, for instance, the exhaustion of the receiver of an air pump by strokes repeated at equal intervals of time; but it is deserving of attention because it appears corroborated during a long portion of life by experience, as I derived the same equation from various published tables of mortality during a long period of man's life, which experience, therefore, proves that hypothesis approximates to the law of mortality during the same portion of life, and in fact the hypothesis itself was derived from an analysis of the experience here alluded to.

This equation satisfied the second condition previously mentioned but did not fulfill the requirements of the first condition—"Chance, without previous disposition to death or deterioration—sufficiently well for commercial purposes.

It was not until 1860, when Makeham, acting upon the original suggestion of Gompertz as to the first condition previously referred to, extended the work of Gompertz by including this condition in the equation, thus giving it the form in which it is at present used, and it appears that this equation can be made to fit mortality tables very closely.

There are four constants in this equation: the first three, $K$, $G$ and $C$, are due to Gompertz; the 4th constant is that of Makeham.

A graduated life curve is one which has been smoothed out and projected beyond the point of retirement experience by means of application of the Gompertz-Makeham equation. The constants for each curve are determined from observed data as supplied from the life tables, and they take on the characteristics of the life table under construction; the projected portion of the curve containing within it the characteristics of that part which is based on experience.

We have had under consideration methods for determining average service life of the various classes of telephone property; only a brief outline of the methods can be attempted here, but it is hoped that sufficient emphasis has been placed on the importance of the work ahead of the telephone companies in preparing their statements which are to be submitted to the Interstate Commerce Commission. Telephone companies should particularly take heed of paragraph No. 14 of the depreciation order which is mandatory in its character.

The Interstate Commerce Commission has been very liberal in making extensions of the time for filing reports, but it must be borne in mind that these extensions are for the purpose of preparation on the part of the telephone companies. The paragraph referred to will bear repetition here:

It is further ordered (14), that each operating class B and class C telephone company shall keep a record of property retirements which shall reflect the service life and percentage of salvage value or net salvage value, as appropriate, of each important class of property hereinbefore specified; shall maintain in convenient and accessible form engineering and other data bearing on prospective service lives; and shall be prepared at any time upon direction by the commission to compute and submit, for the commission's approval, new percentage rates to take the place of those based upon service lives or percentages of salvage value or net salvage value found to be inaccurate.

## Prices in the Metal Markets.

November 7: Copper—Quiet; electrolytic spot and future, 5¼@5⅜c. Tin—Firm; spot and nearby, $23.70; future, $23.75. Lead—Quiet; spot New York, 3.00c; East St. Louis, 2.90c. Zinc—Steady; East St. Louis spot and future, 3.00c.

# Here and There in Telephone Work

### Diagnosis of Illnesses Over Telephone Not Recent Development.

A press dispatch from Battle Creek, Mich., told of a recent transatlantic telephone message by which Dr. John Harvey Kellogg, prominent head of the Battle Creek Sanatorium, diagnosed the case of a former patient there, Mrs. Butler, wife of the Hon George P. Butler, member of the British Parliament, who was in a hospital at Paris, France.

When the item was brought to the attention of F. A. Field, curator of the Historical Museum of the Bell Telephone Co. of Canada at Montreal, Quebec, it recalled to his mind a somewhat similar newspaper account, dealing with what was probably the first instance of the use of the telephone there in diagnosing an ailment.

Turning to the old-time scrapbook compiled by L. B. McFarlane, former president and chairman of the board of directors of the Bell of Canada, that is now one of the most interesting of the 600 exhibits contained in the collection, Mr. Field discovered the following report that appeared in the Montreal Evening Post of December 2, 1879, almost 53 years ago:

"I'll relate you an instance where the doctor relied on the truthful carriage of sound," said Mr. Garvey, manager of the Dominion Telegraph Co. (predecessor of the Bell Telephone Co. of Canada in Montreal, of which Mr. McFarlane was then superintendent of telephones). "A fond mother, one of our subscribers, was disturbed in her slumbers by a hacking cough emanating from her child's crib. She instantly signaled through her telephone for her medical attendant, also a telephone user.

"Both parties were placed in communication and, after a few seconds, the doctor requested: 'Let your child cough into the transmitter.' This was done and the assuring answer came back, 'Put your child to bed, that's not croup.'"

## NOVEMBER

By Miss Anne Barnes,

*Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa*

And now October has gone her way once more, arrayed in her gorgeous costume of burnished gold with amethyst and scarlet trimmings. What a grand home-coming it must be for her to meet all the other Octobers since the beginning of the world!

Already, the November wind is riding low in the sky. Soon it will be whistling in the eaves of our homes, rattling windows, and creeping under doorways. We hear a scratching on a window pane. We turn apprehensively, then a teasing one remarks, "A ghost!" The children fearfully huddle closer to the grown-ups, until the spell is broken by someone assuring them, "There are no ghosts!"

We know that the scratching is caused by the pranky November wind blowing the branches of the rose bush against the window pane. Still we wonder if it might be the "ghost" of the last rose on the bush—which we lovingly watched bud, bloom, and fade—returning, and finding its home cold and bare, asks us to let it share our cozy warmth inside.

November is a homely, brown month canopied under close gray skies, wading in wet, brown leaves, and resignedly bending bare to the approach of old King Winter with his stinging lash of wind, sleet, and snow.

I have frequently heard a remark something like this: "He hung on like a last year's oak leaf, long after he had outlived his usefulness."

This fall, while we were driving about to conferences, we noticed here and there an oak which had not shed all of its leaves. Likely, many of them will hang on until pushed off by new leaves in the spring. How sorry I feel for folks and oak leaves who hang on to their jobs after they have outlived their usefulness.

The first evidence of winter is patches of white frost in the hollows. Some morning soon we are going to awaken to the call of our alarm clock and wonder at the darkness. Naturally, we will blame "Big Ben" for calling us an hour too soon. We will compare time with some other member of the family and find "Big Ben" is right. Now thoroughly aroused, if we will go to the window, this is what we will see:

The air filled with snow feathers from the old goose being plucked up yonder in the leaden sky. We will call out, "Mother, do you know where my last winter galoshes are? It's snowing."

". . . with sounding hoofs across the sky I fly,
A steed Thessolian with a human face.
Sharp winds, the arrows with which I chase
The leaves, half dead already with affright.
I shroud myself with gloom; and to the race of mortals bring nor comfort nor delight."

—LONGFELLOW.

### Pole Line and Drop Wire; Distribution of Accounts.

It is my belief that some of the telephone people do not read carefully the Interstate Commerce Commission's depreciation order No. 14700, nor have they studied the commission's Uniform System of Accounts prescribed in accordance with Section 20 of the Interstate Commerce Act. If they had, there would be no question as to the distribution of certain class of fixed capital.

At both of the group meetings of the United States Independent Telephone Association at Columbus, Ohio, and Des Moines, Iowa, the question of subscribers' drop wire was given considerable time in debating as to what constituted a drop. One engineer took the stand that a complete drop included the twisted pair or wires leading from the cable terminal. His position to my mind is prosaic.

Let us see what the Interstate Commission's order says in separating the various distributions of the property which are subject to depreciation. On page 1 in the classes of property listed is:

"Exchange aerial wire (exclusive of drop wires which extend from the general overhead system to the point of entrance to the subscriber's building.)"

Can anyone say that the pole line is not a part of the general overhead system?

The Uniform System of Accounts in accordance with Section 20, in describing the units of property, is complete in every detail. It describes every item entering into the various accounts, for example, account 221—central office equipment. The description is so complete that anyone could understand what items are to be included.

When it comes to account 243 there are only two small paragraphs. The first one reads:

"Two continuous spans or more of one

wire with or without associated insulators, transposition brackets, etc."

Could anyone say that from 500 to 1,000 feet of duplex or open wire to which a subscriber drop is attached, should be considered as part of the drop?

Let us see what this would mean to some companies. I hope I am not violating any trust with my clients, but I can not refrain from referring to three companies as a proof of the amount of twisted pair, exclusive of drop wire, used in supplying telephone service.

The Kittanning Telephone Co. of Kittanning, Pa., had in service in the city of Kittanning, two years ago, more than 300,000 feet of duplex. The Fort Dodge Telephone Co. of Fort Dodge, Iowa, approximately 500,000 feet. The Stephenson County Telephone Co. of Freeport, Ill., to be exact, in 1929 had 831,725 feet, or approximately 158 miles of duplex which represented a capital expenditure of over $17,000—a large part of which supplied independent line service.

It would be persiflage for me, or anyone, to say that the wires on the pole extending from the cable terminal to where the drop leaves the general overhead system, should be charged to account No. 607.

Drop can only mean one thing: Sinking to a lower position, a sudden descent, or fall, as a drop of 50 feet, drop of a curtain in a theatre; or, to be up-to-date, drop in the value of your securities.

There are many other arguments that could be dispensed with, if those interested would study carefully the order. So why waste valuable time of arguing over something that is clearly described in the commission's order.

Indianapolis, Ind. J. K. JOHNSTON.

## Believe It or Not! A Mystery "Open" Circuit.

By W. M. LASSLEBEN,
*Whittier Home Telephone & Telegraph Co., Whittier, Calif.*

The other day our test board man dispatched a troubleman down to Santa Fe Springs to repair an "open" on one of two common battery dial lines serving an oil company. The troubleman found that the line was "open" back towards the central office. So he rode the line two miles to the cable head, where it tested O. K. He then followed it carefully back to the subscriber's premises, only to find it "open" once more at that point, although the line was up and in good shape every inch of the way.

It was then decided that a bad splice in the No. 14 iron wire was the culprit causing the "open." After several tests, the "open" was run down to where there was only one pole left to climb. When the troubleman went up the last pole, this is what he found:

The wire had rusted in the groove of an insulator to such an extent that it broke, but instead of dropping to the ground, the tie wire, which bridged the break, held both ends firmly at the glass approximately an inch apart. The rusty tie and line wire had prevented an electrical circuit, thereby causing the open.

## Burglars Unknowingly Operate Device to Telephone Alarm.

Two inventors in England have perfected a device which when connected by electric wires to doors, transoms and windows, causes a burglar unwittingly to telephone for the police. He does not know he is doing this because the device is contained in a sound-proof cabinet.

When the intruder opens a door or window an electric circuit is broken. This sets in motion a rubber finger which dials "O" on a telephone, thus calling the exchange.

A record on a turntable like that of a phonograph, repeats into the telephone so that the operator at the exchange can hear: "Burglars are here. Notify the police."

# What Operators Want to Know

### Many State Institutions Have Installed Specially-Designed Switchboards and Employ Blind Switchboard Operators—Work of These Employes is Accurate, Speedy and Satisfactory—No. 72

By MRS. MAYME WORKMAN
*Traffic Supervisor, Illinois Telephone Association, Springfield, Ill.*

Did you know that switchboards are operated by the blind? Last year at the state convention of our association a demonstration in operating the switchboard was given by three blind people and it was an awe-inspiring sight. Recently, 35 blind men and women have been employed as telephone switchboard operators in state institutions in Illinois. State institutions at Elgin, Dixon, Lincoln, Anna, Peoria and Alton employ blind operators.

Specially-constructed switchboards are used for these operators. They are equipped with a high and low tone buzzer and a bell. The low tone buzzer is the signal for a disconnect, the high tone buzzer indicates that someone in the institution wants the operator and incoming calls are designated by the bell. The operator finds the line on which the signal has sounded by a metal trigger which rises at a location in a special panel, corresponding to the location of the answering jack on the switchboard.

The different telephones in the institution are marked on the switchboard with raised Braille numbers to guide the fingers of the operators. The board is so constructed that only one call at a time can be handled and the bell for a second call will not ring until the previous call has been completed.

I have had the pleasure of meeting and knowing Carl Wiley, placement agent for the blind in Illinois. Mr. Wiley has been blind since childhood and he is devoting his life and efforts to finding employment for others who are similarly afflicted. He is a most interesting character, optimistic and cheerful. Each time I have the pleasure of meeting him I am amazed to have him call me by name as soon as he hears my voice.

Not all blind operators work at specially-constructed switchboards. In a little town near Springfield is a blind operator who works at a magneto switchboard, makes out all toll tickets and times toll calls, collects money and gives his customer a receipt. Sounds like a miracle, doesn't it! I have seen all this done and, "seeing is believing."

This young man is a former pupil of Mr. Wiley's, and in my estimation he is one of the best telephone operators in Illinois. He has a cheerful disposition, a "voice with a smile" and his work is accurate and speedy. If the blind can do all this, what should not we be able to do with two perfectly good eyes?

In last week's issue of TELEPHONY, that of November 5, in the question and answer series, an omission was inadvertently made by the printers in the answer to question No. 4. The question is repeated and the correct answer given as follows:

4. Is it necessary for tributary offices to show all reports on the back of her ticket given from toll center to tributary subscriber?

ANSWER: If the toll center deals directly with the tributary subscriber, it will not be necessary to record the reports on her ticket. If ticket records are maintained in the tributary office and the toll center operator passes the reports to the tributory operator, they should be recorded.

**Questions from Illinois Operators**

1. Who stands the loss if a subscriber refuses to pay overtime on a long distance call?

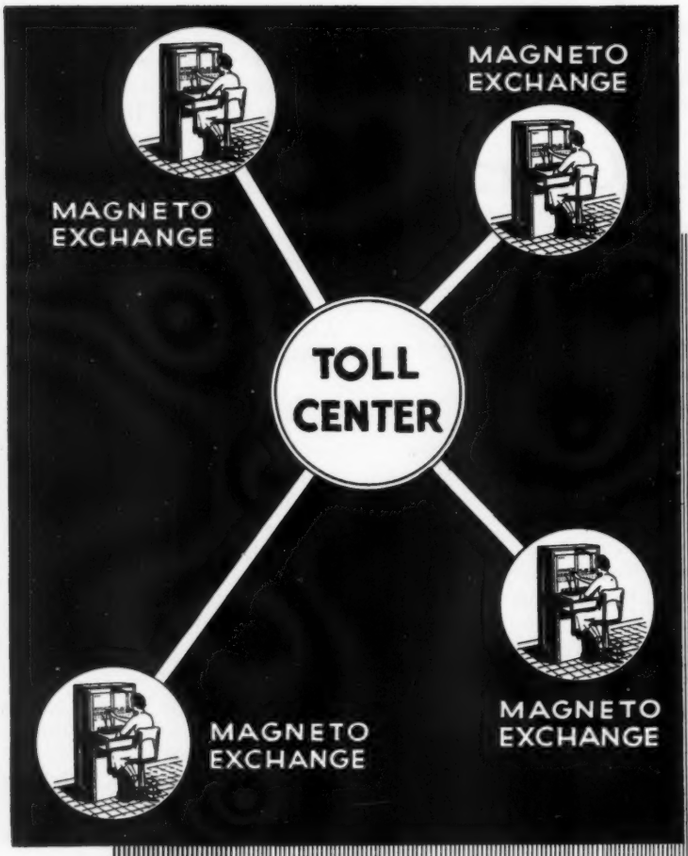
2. Should an operator at a local exchange place her party on the line before the called party has answered?

3. What are the advantages of the tributary operator connecting her subscriber to the toll center recorder on calls beyond the toll center?

4. If a tributary station gives a ticket to its toll center at 9:10 a. m. and the toll center has not reported about the call at 9:15 a. m., how often is she to report to the tributary office?

5. Do you think it is possible to do much CLR work at a one-position board?

*For answers to these questions from real Illinois telephone operators, turn to page 33.*




# A "NEW DE

At Left Above: A Typical Magneto-Operated Network. At Right: The Same Network Under O.C.X. Operation. The Simplification in Operation and Saving in Expense Are Obvious. With Strowger O.C.X.'s, Small Magneto Exchanges Can Readily Be Placed on a Profitable Basis.

STROWGER AUTOMATIC DIAL SYSTEMS

*Exclusive Sales Agents*
*In United States and Possessions*

AMERICAN AUTOMATIC ELECTRIC SALES COMPANY
1033 W. Van Buren St., Chicago, U. S. A.

When communicating with Automatic Electric Co., please mention TELEPHONY.

# ...E' FOR YOUR UNPROFITABLE EXCHANGES!

## Give Your Magneto Offices a Chance With STROWGER O.C.X.'s (Operator-Controlled Exchanges)

HERE is a new Strowger idea for small magneto exchanges which gives them a chance to make money for you! Proven, time-tried Strowger switches are used in a new way to provide magneto exchanges with MODERN, 24-HOUR SERVICE, with NO OPERATOR IN ATTENDANCE. Here are some of its advantages:

1. NO CHANGE in MAGNETO TELEPHONES.
2. NO CHANGE in stations per line or code ring.
3. NO CHANGE in wire plant, (grounded or metallic).
4. NO CHANGE in Main Distributing Frame.
5. NO Local Traffic Expense.
6. NO INCREASE in operating expense at toll center.

With the new Strowger O.C.X.'s (Operator - Controlled Exchanges) you can furnish a high grade of service, every hour of the twenty-four, with DECREASED COSTS. No need for changing the existing rate structure! No need to apologize any more for poor service! No need to keep your smaller exchanges going at the expense of the larger ones, since THE SAVINGS YOU MAKE IN TRAFFIC EXPENSE WILL EASILY TAKE CARE OF THE PURCHASE PRICE OF THE O.C.X.

Write TODAY for full details as to just how this new method of operation will benefit you, as applied specifically to your exchange or exchanges.

...atic Electric Company
...rs of Strowger Automatic Dial Telephone and Signaling Systems
CHICAGO, U. S. A.

*Exclusive Export Distributors*
AUTOMATIC ELECTRIC SALES COMPANY, LIMITED
1027 W. Van Buren St., Chicago, U. S. A.
AUTOMATIC ELECTRIC SALES COMPANY, S. A.
22, Rue du Verger, Antwerp, Belgium

When communicating with Automatic Electric Co., please mention TELEPHONY.

# Outside Plant Men Talk Things Over

## The Results of Our Last Test and the Answers.

By JAKE, THE LINEMAN.

Mornin', buddies! The very first thing we're gonna git done this mornin' is ter find out who wrote the best answers to the questions I gave you on September 10, 1932. I said that I'd try ter pick the best

**J. H. Seaton, of Dallas, Texas, Safety Supervisor, Southwestern Bell Telephone Co., Has Been Connected With the Company Since November, 1910, Starting as a Student Under the Wire Chief and Working Up Through Various Positions in the Plant Department to His Present One Which He Attained in 1928. He Says: "Our Management Is Backing the Accident Prevention or Safety Work to the Fullest Extent."**

paper this time, an' I shure had a time doin' it, fer every paper I received was perty nigh perfect.

After readin' every paper over 'bout forty-'leven times I finally narrowed the field down to two papers, an' there I had ter stop fer where one was weak the other was strong an' vice-versa. As a result we've got two buddies tied fer first place with papers that are both excellent. These buddies are:

Ernie Hymus, Bell Telephone of Canada, 76 Adelaide street, west, Toronto, Canada.

J. H. Seaton, safety supervisor, Southwestern Bell Telephone Co., Dallas, Texas.

Second place honors go to:

Harley J. Barber, West Coast Telephone Co., Forest Groves, Ore.

D. K. Foley, medical department, General Hospital, San Francisco, Calif.

Third place honors go to:

Mark D. McCracken, United Corp., Flora, Ind.

Walter E. Sheldon, Union Telephone Co., Edmore, Mich.

Fourth place honors go to:

Everette W. Kahl, wire chief, Iowa Continental Telephone Co., Nevada, Iowa.

Fifth place honors go to:

E. L. Selander, Tri-State Telephone & Telegraph Co., Red Wing, Minn.

These are the buddies who made the honor roll this time an' if yer paper didn't make it, don't give up the ship. Jist keep on tryin,' an, I'll do all I can ter help you.

The answers to our last set of questions have been taken from the papers of Hymus an' Seaton and to avoid duplication of names I have merely used the men's initials below the answers ter indicate who wrote the answer. Thus the initials E. H. stand for Ernie Hymus, while the initials J. H. S. stand for J. H. Seaton.

I am also presenting pictures of Hymus and of Seaton giving brief descriptions of their telephone work. Now fer the answers to the questions in yer TELEPHONY of September 6:

1. The treatment as I would give it to a person suffering from severe shock caused by injury is:

(a) Lay the patient on his back with his head turned to one side; lower the head and raise the feet. Keep the head lower than the rest of the body so that the blood will run to his brain.

(b) Heat is most valuable in treating shock. Hot water bottles, hot bricks and stones are also helpful but should be tested to make sure that they are not too hot. The heated objects should be placed between the legs, on the outer side of the legs, and between the body and the arms. Heat applied over the heart and to the pit of the stomach is also stimulating.

(c) Guard against losing the natural heat of the body by placing the victim on coats or blankets and putting coats or blankets over the victim. The warmer the room, the better off is the victim.

(d) Rubbing the limbs upwards without removing the covers aids stimulation.

(e) Smelling salts or water of ammonia are useful especially for use upon unconscious persons.

(f) The services of a doctor should be obtained as soon as possible.

(g) The cause of the shock should be ascertained and the proper treatment should be given, according to the cause.

(h) Upon the patient's return to consciousness, stimulants of hot water, coffee, tea, hot milk or spirits of ammonia may be given. The patient should be kept as quiet as possible.

(i) The following points should be considered during the treatment: The first-aider should not leave the patient until he is placed in charge of another responsible person. All wounds should be watched carefully after treatment to be sure that bleeding does not recur as the patient regains consciousness and the heart action improves. (E. H.)

2. Upon removing a person from a closed garage, who is suffering from carbon monoxide poisoning, I would send for a doctor at once. Then I would lose no time in getting the patient in position for artificial respiration as every second counts.

The clothing on the patient should be loosened and a blanket should be placed under him as soon as possible. Hot objects such as hot water bottles, hot glass bottles, hot rocks or bricks should be placed about the victim as an unconscious person becomes cold very quickly.

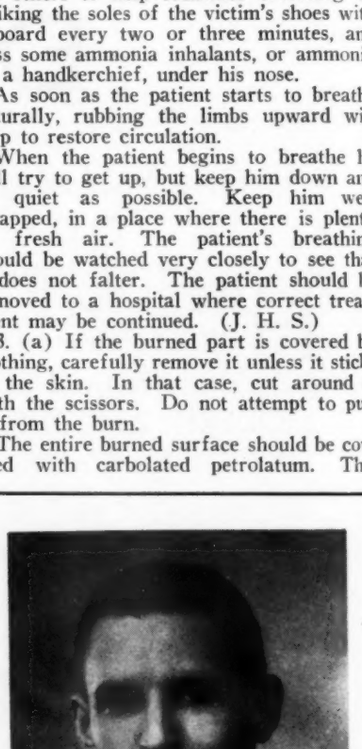
While artificial respiration is being given, get others to help stimulate breathing by striking the soles of the victim's shoes with a board every two or three minutes, and pass some ammonia inhalants, or ammonia on a handkerchief, under his nose.

As soon as the patient starts to breathe naturally, rubbing the limbs upward will help to restore circulation.

When the patient begins to breathe he will try to get up, but keep him down and as quiet as possible. Keep him well wrapped, in a place where there is plenty of fresh air. The patient's breathing should be watched very closely to see that it does not falter. The patient should be removed to a hospital where correct treatment may be continued. (J. H. S.)

3. (a) If the burned part is covered by clothing, carefully remove it unless it sticks to the skin. In that case, cut around it with the scissors. Do not attempt to pull it from the burn.

The entire burned surface should be covered with carbolated petrolatum. This



**E. S. Hymus, of Toronto, Ontario, Has Been Employed by The Bell Telephone Co. of Canada, Toronto Division, for the Past Seven Years. His Well-Written Papers Have Made Him a Constant Winner of the Safety Tests. His Apparent Knowledge of Safety and First Aid Should Be a Real Aid to His Future Progress in Telephone Work.**

should be covered, loosely, with gauze or compresses. A firm bandage should be placed over the dressing to hold it in place.

All blisters that form should be left unopened. Patient should be treated for shock if such treatment is necessary. Doctor should be called at once.

3. (b) In any case of a burn where wax, solder, metal or paraffin is sticking to the

skin it is unwise to remove it. This should be left for the doctor to care for. If an attempt is made to remove it, the skin and flesh would no doubt be torn, thus increasing the shock and pain to the patient and leaving an open wound which is liable to become infected. (E. H.)

4. When blood spurts forth in jets, it is a sure sign the person is bleeding from the arteries, which is very dangerous, and immediate steps should be taken to control the bleeding or the result may be fatal.

In case the party is cut in the upper part of the arm, his sleeve should be gotten out of the way and pressure applied to the arteries just above the wound and always between the wound and the heart. If the bleeding cannot be controlled by pressure on the arm with the hand, a tourniquet should be placed. This tourniquet should be released every 15 minutes.

After bleeding has been controlled, iodine should be placed on the wound and covered with a compress or any other clean material, sterilized if possible, and then bound with a bandage. The person should then be taken to a doctor for further treatment. (J. H. S.)

5. (a) A person about to faint should be taken out in the fresh air. Placing a person's head between his legs for a short interval will often prevent fainting. (J. H. S.)

5. (b) If a person faints, lay him on his back with the head low and the feet raised. Loosen all tight clothing about the neck, chest and waist, and sprinkle the face with cold water. Hold smelling salts to the nose and keep the patient covered. When the patient returns to consciousness, keep him quiet until he is fully recovered. (E. H.)

6. When a patient has sustained an abdominal rupture or hernia, send for a doctor at once.

Place the patient on his back with his hips elevated. Cloths, wet with very cold water, should be placed over the hernia. This will help reduce the swelling in the tissues and thus allow the hernia to more readily slip back into the abdomen. (J. H. S.)

7. The person should be warned not to move the ankle or to step on the foot. The stocking and shoe should be removed and the injured limb should be placed in an elevated position. Cold dressings should then be applied to the joint. Upon doing this the pain will increase but should entirely disappear in an hour or two. In cases of severe sprain, treatment for shock should also be given. (E. H.)

8. (1) Send for a doctor at once when you find a person has received a simple fracture of the lower leg. (2) Make the injured party as comfortable as possible. Cold applications applied at the point of the fracture will help to reduce the pain. (3) Great care must be exercised when handling the patient, especially when handling the injured leg, as rough handling may cause grating of the bones and this will cause pain as well as damage the skin and tissues. (4) Two well-padded splints should be applied. They should extend from two inches below the foot to several inches past the knee. Splints should be tied to the leg on each side of the fracture. This treatment, No. 4, should be followed only when the person has to be moved. (5) Treat patient for shock if necessary. (J. H. S.)

8. The patient should be placed in a comfortable position. After removing the shoe and sock, any bleeding should be attended to by the application of iodine and dressings. Patient should be covered, a well-padded splint should be applied to the sole of the foot and held in place by bandages. The foot should be supported in a slightly raised position until the arrival of a doctor. Patient should be treated for shock. (E. H.)

10. Now for this question I am going to give Mark D. McCracken's answer as it particularly interested me. Here it is just as he wrote it:

"In answer to this question I am mighty glad to say I have found this First Aid business of splendid value to me. Just a few minutes before writing this paper an incident occurred right in my home and I want to tell you about it. After all, if things are not 'fine and dandy' about the home, one's work can never be a source of pleasure.

I have a little son just a little over nine months old. While scooting around the kitchen in his kiddie car he ran against my wife, who was getting supper and, at this particular time, was carrying a pan of hot liquid. Of course a part of the contents of the pan went on the baby's head.

At once the thought of carbolated petrolatum, common baking soda, or olive oil came into my head, and as baking soda was the only thing available we used it. From the first we knew the baby was in great pain from his cries, but after applying the soda treatment he was relieved at once. Thanks to old Jake, The Lineman."

I was shure glad ter hear 'bout that an' it jist goes to show that bein' prepared for an emergency comes in handy sometimes.

Well, I'll be ramblin' 'cause I've stayed longer than usual now but I'll be back again Saturday.

Until then, remember: "A stitch in time saves nine. Learn safety rules, health rules and first aid now an' save trouble later on."

So long. Take care of yourselves!

## New Features in Telephone Span River Crossing.

The telephone line constructed from Whitewater Junction, Calif., to Kingman, Ariz., with a span 1,411 feet from tower to tower where the line crosses the Colorado River, has a number of features which never have been applied before to telephone plant.

There are two consecutive spans instead of one long span; steel towers are used instead of steel or wood poles to support the load; no side guys are placed to steady the towers against wind stresses; fixtures for telephone wires are suspended from the anchor cable at one end. The tension between cables on the long span side of the towers and the anchor side has been balanced. Rollers have been placed on top of the towers which allow for a four-foot lengthening or shortening of the cables, due to the extreme heat and cold of the desert in summer and winter.

The crossing consists of two consecutive spans—one 1,411 and the other 593 feet long—over the main channel of the Colorado River and a wash which is filled with water during the high-water period. This compares favorably with Brooklyn Bridge, which has a span of 1,595 feet and the river crossing over the Gila River, Arizona, which has a span of 2,373 feet.

The wires are transposed on fixtures suspended from two one-inch galvanized steel bridge cables carried on rollers over the top of two steel towers, to a concrete anchor on one end and an anchor tower on the other.

Eleven fixtures of seven crossarms each hang in the main span while five fixtures are suspended from the short span over the wash on the Nevada side of the river. This utilization of the anchoring cables in hanging fixtures is one of the outstanding new features in long span construction.

The two galvanized steel river towers are 88 feet high and similar in design to steel oil-well derricks. Each leg of the tower is weighted with a 25,000-pound solid block of concrete set into rock. On the Arizona end, the steel cables are clamped to heavy steel rods buried in a solid block of concrete over 500 feet back of the tower.

The steel cables on the Nevada side anchor to the top of a 31-foot tower. The cable pull on the top of the tower is offset by a large counterweight, a concrete block 24 feet long, 6 feet wide, and 6 feet high, weighing over 100,000 pounds. This immense mass of concrete is beneath the base of the tower in a hole blasted out of the rock. The anchor tower weighs 13,000 pounds and the Nevada and Arizona River towers, 16,000 pounds each. The ultimate number of copper wires to be suspended will be 60. The initial installation was 30 wires.

The three towers are situated approximately 50 miles south of the Grand Canyon, 35 miles west of Kingman, Ariz., and ten miles from the state line camp, where the telephone company camp was located. The site is in the most barren part of the desert and the camp located beside an old spring, discovered years ago by the Indians.

Until the telephone company established its camp there, the vicinity had but one resident, an old miner who came to the region while making a survey for the government. South of the state line camp and across the Colorado River is Fort Mojave, on one of the old pioneer trails to California.

## Switzerland's Position in the International Telephone System.

Despite her small area and population, Switzerland takes one of the first positions in international telephone traffic, according to United States Commercial Attache M. Steiger, Berne, Switzerland. There are more telephone stations in Switzerland than the whole of Africa, or about half of those in operation in South America.

As to number of stations in operation, Switzerland ranks ninth among European countries, while on a per capita basis her European position advances to third place, immediately behind Denmark and Sweden. Switzerland's telephone system registers a special high density in interurban traffic, which, with a yearly average of 258 connections per station, is highest in the world.

# The Operating Company and the Supplier

## Telephone Company and Supplier in Business Have Mutual Interests—The Curtailment of Operating Maintenance and Rates—Address at Des Moines Group Meeting of the United States Independent Telephone Association

By George R. Folds,
*President, Cook Electric Co., Chicago, Ill.*

The United States Independent Telephone Association and the various state associations usually have their programs designed for the consideration of problems of the telephone industry. Today, we are here to consider, as our most important problem, what we should do under present business conditions which affect not only our industry and all other industries in the world, but all society.

You operators are in public service and, I believe, have a higher duty to business and society in general than men engaged in strictly private business. What are the facts?

The phenomenal growth of the telephone industry of 25 years ago was followed by a slow but steady growth, which slowed up at times but never stopped. It is true that during the war properties were taken over by the government, but with it many of your responsibilities disappeared.

The present situation has brought a new experience to the telephone company, the experience of growing smaller. Has this unduly frightened operating men? All of you have a wide contact with business—commercial, industrial, or agricultural. You are all aware that in these three fields the average shows earnings up and down; and all of them now are way down. You are frightened when you see your business on the down scale, even though it may be only very slightly so.

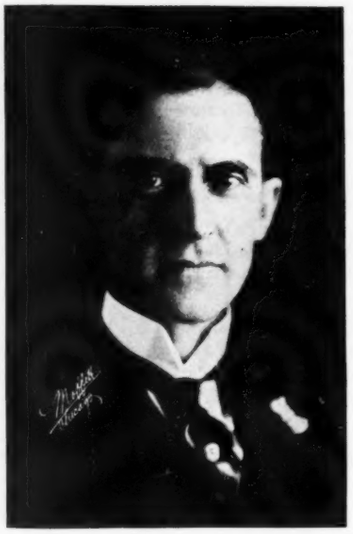
As a matter of comparison, I think we can assume that the telephone companies have an average loss of about 10 per cent in stations, and the average telephone supplier has had an average loss in volume of more than 80 per cent. Compared with other lines, there are very few which have not suffered a much higher percentage than telephone companies. I am basing these figures on the average peak of 1928 and 1929.

Telephone rates are only approved when based on a fair return upon investment in plant and cost of service. Your operating cost includes depreciation as an important item, and this is allowed for replacement of wornout and obsolete equipment.

If operating costs increase, the telephone operator is entitled to ask for an increase in rates. Obviously the reverse must be true. We, therefore, must approach the question as to whether it is wise to curtail our operating maintenance cost beyond the point that would justify the rates asked. And we must go further and see if the reserve that we are setting up for depreciation is being used for the proper maintenance of our plant.

I have some figures recently obtained from four Independent telephone companies which are significant:

Case No. 1. Plant was maintained in fair condition only and 46 per cent of trouble was cleared the day reported. The loss of subscribers was 64 per cent.



**"I Am Not Advising a Buying Spurt," Said Mr. Folds, "I Just Counsel That You Each Examine Your Own Situation and Determine If You Are Spending What You Can, and Should, to Put Your Properties in First-Class Condition."**

Case No. 2. Maintenance was also only fair and 61 per cent of trouble cases was taken care of on the day reported. The loss of subscribers was 58 per cent.

Case No. 3—Plant maintenance was good and 76 per cent of trouble cases was taken care of on the day reported. The loss of subscribers was only 12 per cent.

Case No. 4. Plant in good condition and 93 per cent of trouble cases taken care of on the day reported. The loss of subscribers was only 7 per cent.

Of course, these figures are not conclusive, but they indicate that the best-maintained and best-operated property will suffer the least. If you telephone men would keep your plants in first-class condition and spend the greater part of your depreciation reserve, we manufacturers and supply men would have a greatly increased business.

At these telephone meetings there is probably a considerable amount of sentiment. We who have transacted business together for many years and who have met on many occasions to discuss our mutual problems, have developed friendships which such contact is sure to bring. I believe, therefore, you are doubtless more interested in the welfare of your telephone suppliers than you are in any other industry outside your own communities.

Whatever you can do to help your suppliers, and also your own community, you are surely glad to do—but what are you doing about it? Is the telephone industry marking time waiting for the other fellow to set things straight?

Reasons for business depression are world-wide, and many of them are requiring much time to correct, but it seems to be universally agreed that, regardless of what governments do or industrial leaders attempt, final recovery can only be had by restoration of confidence all along the line. As public servants you have a high duty to lead and take an outstanding part. Ask yourselves: "Are we marking time, or are we doing all we can?"

In "Nation's Business" I recently read about a group of farmers at Mitchellville, Iowa, who decided that economy had become too much of a "fad" and pledged themselves to abandon it. In their opinion, many people, financially able, are not buying the merchandise they desire and need; and they determined to buy the things they want and can afford for their own personal home or farm use. They resolved:

"Right now each of us needs from $1,000 to $3,000 worth of farm equipment. We will buy this equipment and other things just as rapidly as possible. We will give the word of approval to the man or woman in town or country who buys the thing he or she wants and can afford."

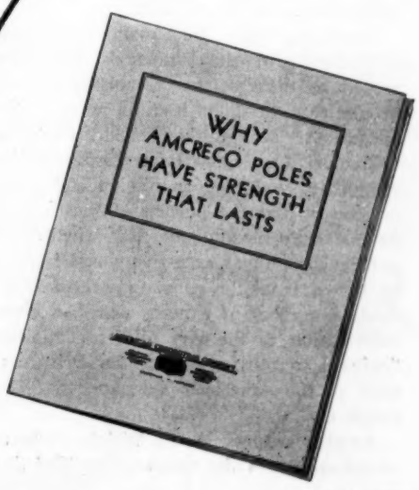
I am not advising a buying spurt. I just counsel that you each examine your own situation and determine if you are spending what you can and should to put your properties in first-class condition. Do you feel that you are doing your bit to restore confidence, and thus regain the loss of subscribers?

The Independent manufacturers are a part of the Independent telephone industry. Without them, Independent companies could never have been established or thrived.

# CAN "installment" treatment be satisfactory?

**Two fours ordinarily make an eight, but it has not yet been conclusively demonstrated that two four-pound treatments, with an interval between, produce the same results in a pole as a single eight-pound treatment. This company still holds to the policy of treating poles fully at one time, when they have reached the proper degree of seasoning—not before and not after. There is no question about the high quality produced by such practice.**

*Send for this booklet*




AMERICAN CREOSOTING COMPANY
INCORPORATED

COLONIAL CREOSOTING COMPANY INCORPORATED — AMCRECO LOWRY PROCESS CREOSOTED WOOD — GEORGIA CREOSOTING COMPANY INCORPORATED

LOUISVILLE — KENTUCKY

T-11-12-Gray

When communicating with American Creosoting Company, please mention TELEPHONY.

The prosperity of the Independent manufacturers is of major importance to the Independent telephone companies.

Operators should recognize their obligation to the Independent manufacturers and give them all the business they can. The manufacturer has always carried on research and development for the Independent industry and has also done much engineering for many companies. This work with its high expense should not be completely curtailed. You should help pay for it by buying all you can afford from your Independent manufacturers. Let's all return to prosperity together!

### Telephone Service Opened Between North America and Peru.

Radio telephone service between the United States and Peru was opened on Friday, October 14, with an exchange of greetings between government officials of the two countries.

In North America, service is available to Bell and Bell-connecting telephones in the United States, Canada, Cuba and Mexico, while in Peru it is limited to those telephones in Lima, Callao, and a few other cities, which, however, account for about 70 per cent of telephones in that country.

The service is maintained over a short-wave channel between radio telephone transmitting and receiving stations of the American Telephone & Telegraph Co. in New Jersey and those of All America Cables, Inc., at Lima, Peru.

# What the Commissions Are Doing

## Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

### Commission Engineer Testifies on Hand-Set Telephone Costs.

An additional charge of only 11½ cents a month for the use of the hand-set telephones would cover the additional cost to the company of furnishing this service and allow a profit of 13 cents a year, Ward E. Hinman, assistant engineer of the New York Public Service Commission, testified on November 2 in New York City at the continued hearing on the charge of the city affairs committee that the New York Telephone Co.'s 25-cent monthly charge for these telephones is excessive.

Mr. Hinman, telephone engineer of the commission since March, 1926, held that 13 cents a year was all the additional profit the company is entitled to for the substitution of the hand-set telephone for the old desk type. His testimony was given under questioning by Colonel Charles G. Blakeslee, counsel to the commission, and Edward L. Blackman, counsel for the company, on a series of studies prepared by him.

When Colonel Blakeslee offered them in evidence, Mr. Blackman objected and indicated he would present further objections at the next session of the hearing, on November 23. Commissioner Milo R. Maltbie, who presided, reserved decision on the admissibility of the exhibits.

Previously Mr. Blackman, concluding presentation of the company's case, had moved to dismiss the complaint on the ground that there had been no proof of the allegations. Mr. Maltbie denied the motion.

Michael Ress, counsel for the city affairs committee, said the commission had ruled previously that the burden of proof must be on the company and that whether or not the charge was excessive would have to be shown from the company's records because a number of experts who had given information to the city affairs committee "refused to testify against the Bell company or the American Telephone & Telegraph Co."

Another witness, A. D. Welch, assistant vice-president of the company, testified that the number of telephones in use in New York state had dropped from 2,588,000 in May of this year to 2,467,000 in September.

Under questioning by Mr. Ress and Assistant Corporation Counsel Harry Hertzoff, Mr. Welch admitted that employes of the company attempt orally to get subscribers to change to hand sets and that when telephones are put on the dial system subscribers receive a printed notice telling them they can have hand sets substituted at that time without an additional charge of $2.50. He said "we consider it our obligation" to tell people this.

Russell H. Hughes, another assistant vice-president of the company, testified regarding more than 400,000 desk sets that were part of a purchase from the American Telephone & Telegraph Co. in 1928 and were "discarded as surplus stock" in 1930 and 1931. Their purchase at $2.45 and subsequent disposal at less than 9 cents an instrument as salvage had been brought out at the previous hearing.

Mr. Hughes said that the company's 1927 estimate of the demand for new telephones for the next five years had made the purchase a very logical one at the time.

### Company Granted Increase in Rates for Improved Service

The Urban Telephone Co., of Clintonville, Wis., on October 4 was granted an increase in its rates by the Wisconsin Public Service Commission following a hearing in Madison on July 15, 1932, in the matter.

The application of the Urban company was filed with the commission on April 11, 1930, and set forth that the magneto system at Clintonville was being replaced by an automatic installation; that other improvements were being made, all of which involved an expenditure of about $75,000; and that present rates are inadequate to provide a reasonable return on the company's increased investment.

The improvements under construction at the time of the company's application have been since completed and are at present in operation.

At the hearing a number of exhibits were submitted including a commission appraisal of the company's property as of January 1, 1930, an audit of its books by the commission's accountants, and a summary of 1931 operating results from the company's annual report to the commission. The company introduced exhibits showing revenues, expenses, and station movement for the first six months of 1932. R. H. Morris, city attorney, submitted a brief on behalf of the city sometime after the hearing.

From testimony presented it appears that during 1929, and for some years previous, telephone service at Clintonville was inadequate and very unsatisfactory. The magneto system in service had outlived its usefulness and the outside plant required considerable rearrangement and repair.

To remedy this situation the company decided to install automatic equipment, provided that a majority of its Clintonville subscribers would approve the change and agree to accept an increased schedule of rates which the company believed necessary to cover operating costs and a reasonable return on the increased investment. Such approval and acceptance was obtained from over 80 per cent of the Clintonville subscribers on cards which clearly stated the company's proposal, including the revised rate schedule.

With this assurance, the company issued $75,000 of 6 per cent 15-year bonds and purchased and installed automatic equipment. It should be noted, however, that the decision to convert to dial and the initial work on the project occurred during the summer of 1929, when neither the company nor its subscribers foresaw the present period of prolonged business depression.

About this same time, the company's outside plant was thoroughly overhauled and

(*Please turn to page 32.*)

# "Black Beauty"

## POLE QUALITY is the ONLY TRUE POLE ECONOMY

The makers of Black Beauty Poles are proud of their reputation of being "the highest-priced telephone poles in the world." In the face of years of competitive efforts, this is merely another way of saying that Black Beauty Poles are the highest quality telephone poles available.

And today, when economy is paramount, Black Beauty quality stands more apparent than ever as the only true measure of pole economy. You cannot fight sleet storms, fungi, and other pole enemies with a "price discount." Make sure that your specifications read "Black Beauty Poles", too. And above all, do not say "or equivalent" because Black Beauty quality has no equivalent.

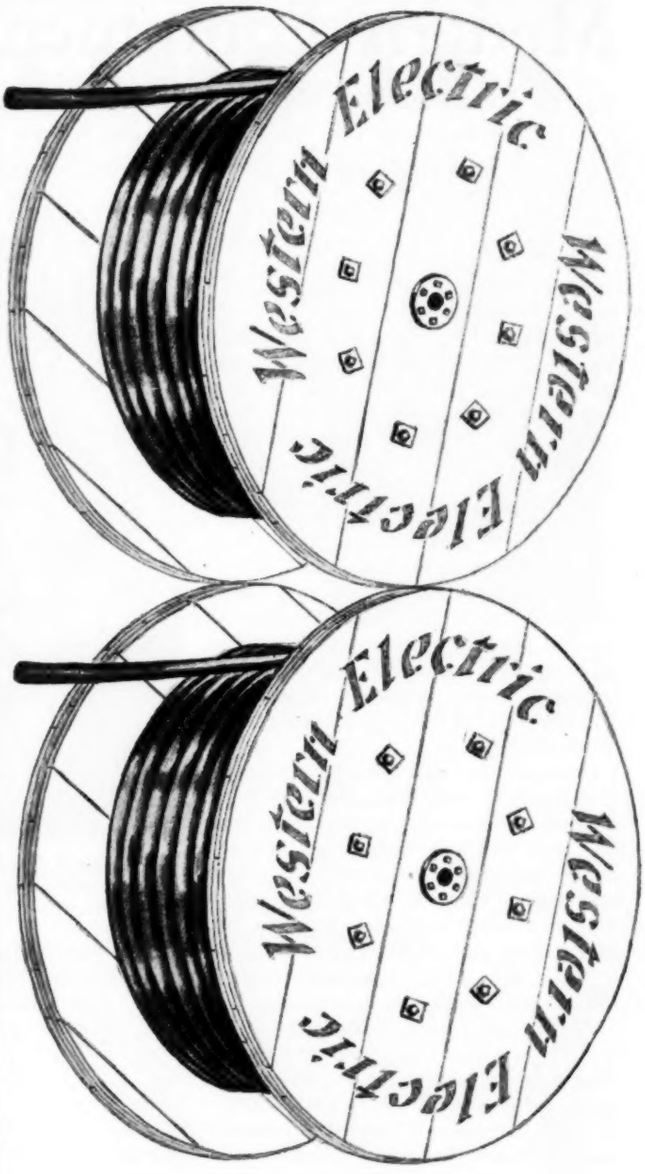
TEXAS CREOSOTING CO.
Orange, Texas
Exclusive Distributors: American Automatic Electric Sales Company

# Extra Battery Service That Means A Saving for You

Service of 24 months and more from Ray-O-Vac Telephone Batteries is not unusual, according to actual records of users, and verified by tests conducted in accordance with U. S. Government Standards. Not only is there a distinct economy in the hour-cost of Ray-O-Vac Batteries, but there's a real saving in service expense, due to less frequent replacement. Our engineering department will be glad to submit specific data on the longer life and better performance of Ray-O-Vac Batteries.

RAY-O-VAC

FRENCH BATTERY COMPANY
*Factory and General Sales Offices:*
MADISON, WISCONSIN
*Manufacturers also of Ray-O-Vac Flashlight Batteries, Rotomatic and Standard Flashlights and Electric Lanterns.*




# CABLE...

## and 60,000 other items

The guarantee of quality implied by the name Western Electric on Western Electric lead-covered cable has long been recognized by the telephone industry. But equally important is the additional endorsement of Graybar—an endorsement that insures the quality of 60,000 electrical items.

Graybar

OFFICES IN 76 PRINCIPAL CITIES. EXECUTIVE OFFICES: GRAYBAR BLDG., N. Y.

# Modern Equipment in Woodstock, Va.

## Farmers' Mutual Telephone Co., of Edinburg, Va., Operating Seven Exchanges, Changes Its Woodstock Exchange to Common Battery Operation—Some of Problems Encountered in Rehabilitation of Exchange—Company's History

By A. W. Schell,
*Representative, Kellogg Switchboard & Supply Co.*

Woodstock is the latest exchange of the Farmers' Mutual Telephone Co. of Edinburg, Va., to be cut-over to a Kellogg 6-800 Masterbuilt switchboard. Woodstock, the county seat of Shenandoah County, is located midway between Harpers Ferry on the north and Staunton on the south in the heart of the Shenandoah Valley.

Many of the old records in the Court House, built in 1792, were penned by Thomas Marshall the first clerk of the county and the father of the first chief justice of the United States Supreme Court. The first settlement was probably made by Jost Hite and his three sons-in-law, who came into the valley from York, Pa., and located near the present site of Winchester.

Gradually the town grew and eventually a telephone system was installed. The original telephone company was started by the Hites and this family has been actively interested in it ever since. The present plant chief, M. Lloyd Hite, helped his father build the first telephone line out of Edinburg over 30 years ago. Gradually more lines were constructed and a switchboard installed at this location.

A few years later, a consolidation of all the telephone lines in Shenandoah County brought about the present organization. The entire company worked capably and harmoniously toward a common goal of giving the public good service.

Just recently this mutual company held its 30th annual meeting. The records

**Pole Changer, Power Board, Batteries, Charger, and Other New Power Equipment in the Woodstock, Va., Exchange.**

at that time showed M. Lloyd Hite, plant chief, credited with 27 years of service; S. B. Miley, treasurer and general manager, with 25 years of service; N. F. Snarr, secretary, with 25 years of service; and P. S. Rhodes, president, with 10 years of service.

Under able management, the Farmers' Mutual Telephone Co. has progressed rapidly. It operates seven exchanges, all situated in a prosperous section of the state and all equipped with Kellogg switchboards. The company's long list of loyal, satisfied subscribers, together with the progressive spirit of its officers and the use of good, reliable equipment throughout the system, is good assurance of its future progress and growth.

The executives deserve a great deal of credit. They created and are seeing an ideal fulfilled—that of giving excellent telephone service to the 30,000 inhabitants of Shenandoah County. When one considers that agricultural pursuits are the subscribers' sole source of income and that these sturdy, conservative farmers cannot conceive of any business listings necessary to designate them in the classified section of the directory, one can more fully realize the magnitude of the task of making the company return a profit.

From Mr. Hite's record of faithful and intelligent service, and the long continued success of the company, it is easy to understand why the officers and stockholders agreed, when he first suggested the idea, to improve the service at Woodstock, Va.

A new and logical location for a central office had to be decided upon since an entirely new outside cable plant had to be considered. Then like most old, historic towns, Woodstock was alleyless. To this was added the problem of having two power companies to cope with so as to get the ultimate in distribution for all three concerned, yet keep in the good graces of the city dads and various civic bodies. The fulfillment of this task demanded far more

**Kellogg No. 6-800 Masterbuilt Switchboard Recently Installed in the Farmers' Mutual Telephone Co.'s Exchange at Woodstock, Va.—Terminal Room, Showing Relay Rack, Main Frame, and Power Equipment.**

than mere engineering skill, but both Mr. Miley and Mr. Hite were fully capable of handling the task.

The satisfactory service given by Kellogg double lamp supervision magneto switchboards at four of the Mutual company's exchanges—Strasburg, Toms Brook, Mt. Jackson, and New Market—was sufficient ordinarily to warrant the same type equipment for Woodstock. Yet the company looked to the future and decided common battery equipment was preferred.

With less than 100 subscribers eligible for common battery service and about 350 rural subscribers, it was a difficult task to convince about 1,000 stockholders that here was a place where a precedent must be set so that future expansions at any of the other exchanges could be standardized accordingly; but it was accomplished.

Mr. Hite personally has installed and maintains all the company's equipment and the Masterbuilt job was no exception. Quite obvious is the neat, effective, workmanship carried out in this entirely new telephone plant. The skillful placing of the 70 cable terminals gives the ultimate for distribution with the minimum of drop exposure and still leaves ample space for future growth.

Mr. Hite takes special pride in the placing of the 700 pairs of silk and cotton insulated lead sheath cable on the main distributing frame, but the extent of his ability is even more emphatically demonstrated in his excellent work of installing the central office equipment.

The switchboard has two positions equipped with 200 universal line circuits, leaving a growth for 600 more common battery lines. The 20 toll lines are of the drop signal type, as are the 30 rural lines. The universal cord circuits feature two-party selective automatic ringing, and the power circuit the automatic charge control.

Further evidence that this mutual telephone company is well stabilized and knows what it is doing, is the moving back of its main pole line—about 30 miles in length—to permit the widening and straightening of the valley pike, a national United States three-lane highway. The cost of doing this would ordinarily bankrupt a small operating company, yet within the last three years the entire task has been accomplished and the company has at no time had to relinquish its "cash and carry on" policy.

These country exchanges feel more fortunate than their big city brothers in that their subscribers' listings under capable management, are increasing and that they are able to give more service per dollar.

Although the initial cost of the equipment meant the expenditure of thousands of dollars, the Mutual company has builded for the future; in fact, it is believed, for all time to come, considering that the new Masterbuilt board will take care of 800 lines before its maximum is reached.


# NATIONALS

National Double Tube Sleeve

## —the Lineman's Staunch Ally in Times of Trouble

Completed National Splice

Wind and Sleet—Ice and Cold—Wires broken—Lines Down—Trouble, trouble, trouble—Every lineman working at top speed. Many, many splices to be made—made quickly and made to stay so the work won't have to be done over a second time. National Splicing Sleeves are a real ally to the construction, maintenance and repair crews under these tough, trying conditions. For with National Sleeves the splice is quickly made, the wires are twisted so tight that practically a welded unbreakable joint is formed, and every splice is uniform with every other. Telephone Companies the world over know what trouble shooters National Splicing Sleeves are, that's why they carry a special supply in stock for emergency service. Send your order today for your emergency stock of Nationals. Prices and samples on request.

*"If It's a Splice— Make It a National"*

**THE NATIONAL TELEPHONE SUPPLY COMPANY**

5100 SUPERIOR AVENUE CLEVELAND, OHIO

Export Distributors—INTERNATIONAL STANDARD ELECTRIC CORP.—New York

## WHAT THE COURTS AND COMMISSIONS ARE DOING.

(*Continued from page 28.*)

partially reconstructed. Open wire in the business district of Clintonville was removed to adjoining alleys or placed underground. On May 1, 1930, the exchange was cut over to automatic service.

For more than two years Clintonville urban subscribers have been receiving modernized service under rates established for magneto operation.

The commission's order said in part: "While this commission is firmly convinced that during the present period, utility rates wherever possible should be reduced rather than increased, nevertheless we are fully cognizant of our obligations to utilities and to safeguard the legitimate interests of utility investors.

"Due to the conditions outlined, it is quite probable that the Urban Telephone Co. will be unable to meet its fixed charges unless some relief is granted. The annual fixed charges of this utility amount to $4,500. There are also outstanding $50 in preferred stock and $49,900 in common stock on which the company should be allowed an opportunity to earn a seasonable return.

As shown in the evidence, even after certain adjustments in operating expenses, only about $5,500 will be available to meet these charges under present rates and, assuming the last six months of 1932 duplicates the operating results of the first six months, less than $3,000 will be available for interest and dividends.

Although it is true that on the basis of the last two years' operations Clintonville appears more profitable than the other company exchanges (Marion, Bawler and Tigerton), it is obvious that the installation of dial equipment is responsible for the company's present predicament.

This improvement not only increased expenses at a time when strict economy was essential, but also burdened the company with substantial fixed charges which are proving excessive. The dial conversion project also required the services of most of the company's plant forces which caused deferment of maintenance work at the other company exchanges. The cost of making up this deferred maintenance is an important factor in explaining the poor showing of these exchanges during the past year.

For these reasons, we believe that the recipients of the improved service should supply the relief necessary for the utility. Accordingly, the rates authorized will apply only to Clintonville local subscribers and to those on rural lines who wish to receive automotive service. The increase provided will amount to only about $2,200 annually, but we believe revenues accruing under the revised rates will be sufficient to meet reasonable operating costs with an ample margin for fixed charges and adequate common stock dividends.

Rates as authorized herein may be made effective for service rendered on and after the first day of the month following the date of this order until a permanent rate schedule is established.

It is further ordered that jurisdiction in this case is hereby retained for an 18-month period with the understanding that the commission will authorize a permanent rate schedule before that date or make a specific finding of cause for further extension of the time limit.

It is further ordered that a report of revenues, expenses and stations in the several classes of service be furnished the commission every three months during the period the authorized temporary rates are effective."

The new monthly net rates at the Clintonville exchange, in comparison with the old rates, are as follows:

| | New | Old |
|---|---|---|
| Business one-party | $3.25 | $2.75 |
| Business two-party | 2.75 | 2.50 |
| Business four-party | 2.50 | 2.25 |
| Business extension | .... | .75 |
| Residence one-party | 1.95 | 1.75 |
| Residence four-party | 1.45 | 1.25 |
| Residence extension | .... | .50 |
| Business rural multi-party | 2.25 | .... |
| Residence rural multi-party | 1.65 | .... |

All other rates, charges, rules and regulations are to remain unchanged as filed with the commission.

---

## Court Holds Telephone Conversations Admissible Evidence.

The Nebraska Supreme Court has joined several other states in holding that a telephone conversation is admissible in evidence in a trial in court.

James F. McLaughlin, a cigar store dealer in Omaha, had appealed from a conviction on the charge that he had permitted race-track gambling devices to be used in his place of business. Part of the testimony against him was that of a police officer who had answered a telephone call while the raid was in progress. The person at the other end of the wire was a woman who said she wanted to place several bets. She refused to give her name, but identified herself by a number.

The defense raised the question that testimony as to a telephone conversation with an unidentified person is not admissible. The court, however, says that it is usually the weight and not the admissibility that is affected. The telephone wire served an illicit purpose in connection with the use of the gambling devices in the store, as was shown by the fact that the officer was enabled to pick out on race-track gambling forms in the store the horses the woman wanted to bet on. The court said that the use of the telephone, therefore, was clearly one of the circumstances provable at the trial.

The court adopted three other state decisions for its own. In one of these it said that conversations with a person not identified over a telephone are admissible in evidence to the same extent as a personal interview with an unknown clerk in charge of an ordinary shop would be in relation to the business carried on therein.

In the other the court said that if a voice is not identified or recognized but the conversation is held through a telephone kept in a business house or office, it is admissible. The effect or weight of it is a matter to be determined by the jury that heard the testimony.

---

## Galway (N. Y.) Telephone Co. Sold to New York Bell.

Approval of the sale of the Galway Telephone Co., operating an exchange at Galway, N. Y., serving some 200 subscribers in that village and vicinity, to the New York Telephone Co., has been given by the Interstate Commerce Commission following a hearing on the application.

The Galway company, according to the report of the commission in this proceeding, owns and operates a telephone exchange or central office in the village of Galway, Saratoga county, serving about 200 stations in Saratoga and Schenectady counties, New York. The plant is connected with the New York company's system, so that its subscribers may reach all points on the Bell system. If the proposed acquisition is effected, there will be no change in such connections. No competitive condition exists and there is no duplication of plant or service.

The applicants entered into an agreement dated March 21, 1932, providing for the sale, not later than November 1, 1932, of all of the Galway company's fixed capital assets, exclusive of any leases of real estate, to the New York company, free and clear of all liens and encumbrances, for $10,000, plus the value at the time of such sale of the net additions, if any, in fixed capital assets made with the consent of the New York company subsequent to July 1, 1931, and up to the date of closing the transaction. The properties to be acquired include 11.5 miles of toll wire and eight miles of toll pole mileage. The Galway company does not own any real estate.

An appraisal as of July 1, 1931, of the properties by the New York company's plant and equipment engineers finds the cost of reproduction new of the property to be retained in service to be $26,452, and, less depreciation, $12,950. The total structural value of the property to be retired from service due to proposed improvements is $4,052, from which there is an estimated gross salvage value of $296. The total cost of removal is estimated at $1,981. The value of the property is substantially the same as of the date of appraisal as the net additions since then are negligible.

The fixed capital assets of the Galway company, as of December 31, 1931, were $22,133, and the total assets $26,764.63. Capital stock was $5,000. The company has no funded debt. The net corporate deficit for 1931 was $742.28.

The territory served by the Galway company is very largely rural in character, including no locality larger than the village of Galway, which has a population of less than 200. The territory is nearly surrounded by territory in which the New York company operates. This section is subject to storms during the winter months, and the Galway company suffered heavy losses from sleet storms in three alternate years subsequent to its purchase of its property, in 1927.

Practically all the capital stock of the company is owned by its president, and he and the other officers believe that their investment involves too great a risk to continue operation as a separate unit. Furthermore, necessary extensions and improvements to the plant and equipment would cost approximately $18,000, and the Galway company is without funds for such purpose. If the proposed acquisition is effected the New York company will proceed to make such extensions and improvements as are necessary to give proper service in the territory in question.

It believes it can maintain and operate the property as a part of its own system more economically and furnish a better grade of service than is now being furnished by the Galway company. The rates to be charged will be on a somewhat different basis, but about 93 per cent of the present subscribers have rural-line residence service, for which there will be no change in rates.

At the hearing there were introduced in evidence communications from a number of representative telephone users, all favoring the proposed acquisition.

Upon the facts presented the Interstate Commerce Commission finds that the acquisition by the New York Telephone Co. of the properties of the Galway Telephone Co., in accordance with the terms of the agreement, will be of advantage to the persons to whom service is to be rendered and in the public interest.

## Installation of Common Battery at Skiatook, Okla., Ordered.

The Oklahoma Corporation Commission on October 27 issued an order requiring the Standard Telephone & Telegraph Co. to install a common battery system at Skiatook to replace the present magneto plant. The new system is ordered to be placed in operation within a reasonable time from the date of the order.

The telephone company opposed the application of citizens of Skiatook for the common battery system on the ground that it had lost practically 50 per cent of its subscribers during the present depression, and that general economic conditions made the cost of installation of a modern plant prohibitive.

The commission held that the present equipment is obsolete and retards the growth of the town; and that had a depreciation reserve been set up and maintained in the past, it would have provided funds for the improvement demanded.

The commission's opinion observes that installation of the common battery system "will likely increase the number of subscribers and promote a feeling of good will and cooperation between the telephone company and the subscribers, which will inure to the benefit of both."

## Answers to the Traffic Questions Presented on Page 21.

1. The telephone company stands the loss. Every effort should be made to collect the overtime.

2. On a call where the calling party has been dismissed, the operator takes up the calling party's line but does not ring his number until she has reached the called party or has obtained a report. On a call from a pay station, she calls the calling party to be sure he is there before working out on the toll circuit.

3. This procedure results in faster service for the tributary subscriber and is a saving of circuit and operators' time.

4. The tributary operator is due a report 15 minutes from the filing time, or 10 minutes from the time the subscriber's line was ordered held.

5. Even on a one-position board, every effort should be made to give CLR service. It is appreciated that during the busy hours subscribers must necessarily be dismissed.

## Home Telephone & Telegraph Co., Fort Wayne, Ind., Wins Suit.

Judgment in favor of the defendants was given recently by Special Judge Sol A. Wood in the suit of the Rudy Tire Service Co., Inc., against the Home Telephone & Telegraph Co., Fort Wayne, Ind., and Troy V. Rudy, in superior court No. 1.

According to the evidence, the General Tire & Rubber Co., after acquiring some of Mr. Rudy's merchandise, organized the Rudy Tire Service Co., Inc., and sought to retain Mr. Rudy's old telephone number. Under the judgment on October 25, a temporary restraining order which had been entered, seeking to prevent the telephone company from giving Mr. Rudy his old telephone number, was dissolved.

## Briefs Filed in State Supreme Court in Minimum Rate Case.

Briefs have been filed with the Nebraska Supreme Court by attorneys for the street railway company and various taxicab companies of Omaha in support of their appeal from a decision of the Nebraska State Railway Commission refusing to declare unconstitutional the law prohibiting all regulatory bodies from fixing minimum rates to be charged by public utilities and common carriers.

The claim is made by the attorneys for appellants that the law is invalid and unconstitutional because the state constiution gives the state railway commission exclusive jurisdiction over such matters, and that the legislature is, therefore, without power to limit or direct its discretion in the fixing of any rates.

The law has been on the statute books for a dozen years, and was placed there through the influence of United States Senator Howell, a public ownership advocate. Members of the commission were inclined to agree with the legal representatives of the protesting utilities that the law is bad, but did not care to be put in the position of declaring a state law unconstitutional.

The matter comes up in the form of an application by a taxicab company, promoted from outside Omaha, which proposed to slash fares to a point where the street car company says it would lose the short-haul downtown, now the only profitable part of its business, and the taxicab companies say that they would be ruined by such competition. The commission held, for the first time in its history, that it could regulate the number of utilities or common carriers in a particular field, and from this the applicant taxicab company appealed to the supreme court.

The power of the commission to compel the procuring of a certificate of convenience and necessity is upheld in the same brief filed by the street car company and taxicab owners. They contend that this is a proper exercise of the regulatory and supervisory powers of the commission, and that without such right it cannot function fully in the field to which it has been assigned by constitutional action. It follows, they argue, that the right to determine whether a community is fully and properly served and to prohibit such competition as will injure or destroy that service is inherent in the commission.

## Authority Sought to Consolidate Ohio Independent Companies.

Application has been filed with the Ohio Public Utilities Commission asking authority for the consolidation of the Independent exchanges at Ada, Waynesfield and Delphos. These companies are part of what was known as the Sweezy properties.

Under the terms of the application the Lima Telephone & Telegraph Co. asks permission to purchase the Ada Telephone Exchange Co., the Delphos Home Telephone Co. and the Waynesfield Telephone & Telegraph Co. for the lump sum of $425,000. The application does not state the allocation of this sum among the three companies.

George B. Quatman of Lima is general manager of the four companies and Curtis M. Shelter, of Canton, is attorney.

**Using Indicators in Transmission Measurements.**

The use of power level indicators in making transmission measurements is based on the fact that if the power levels at two different points in a telephone circuit are measured and compared, the loss in dbs. can be readily determined by the equation: dbs. $= 10 \log_{10} \frac{P_o}{P_i}$ where $P_o$ = power output in watts and $P_i$ = power input in watts.

Inasmuch as the power level indicators are calibrated to read directly in decibels it is not necessary to use this equation; merely algebraically subtract the power level in decibels as measured at the input and output ends of the circuit under measurement.

Fig. 3 illustrates the method used in measuring the transmission loss of a cable and open-wire circuit between two towns. It will be noted that a 1,000-cycle oscillator and two power level indicators are required. The reason for using

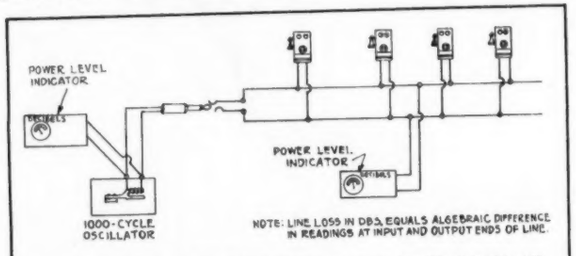

POWER LEVEL INDICATOR
DECIBELS
POWER LEVEL INDICATOR
DECIBELS
1000-CYCLE OSCILLATOR
NOTE: LINE LOSS IN DBS EQUALS ALGEBRAIC DIFFERENCE IN READINGS AT INPUT AND OUTPUT ENDS OF LINE.

FIG. 3. METHOD OF MEASURING TRANSMISSION LOSS OF TELEPHONE CIRCUITS WITH POWER LEVEL INDICATORS.

a 1,000-cycle driving source rather than some other frequency is because it is standard practice in this country to express transmission losses in terms of the loss at 1,000 cycles as this frequency represents the average of the various frequencies which make up the human voice.

The oscillator may be any type that will deliver a power output of approximately plus five to plus ten decibels, and having an internal impedance of approximately 600 ohms.

In making measurements by the method shown in Fig. 3 the oscillator should be connected to the input end of the line and the input power determined from the reading of the input power level indicator connected across the oscillator terminals. The second power level indicator should be connected across the line at the point to which a measurement is to be taken and the power level at this point noted. The loss in decibels of the circuit between input and output ends is then determined by algebraically subtracting the input reading from the output reading.

To illustrate this method, assume an input reading was + 5 db. and the output reading — 10 db., then the loss



between the input and output ends of the line would be:

— 10 db.
+ 5 db.

— 15 db. line loss.

In the small telephone plant, transmission measurements by the method just described can be facilitated by mounting the oscillator and input meter together and equipping with a cord and plug so that the operator can connect the oscillator to any desired line when the tester is out on the line and ready to take a reading.

In making transmission measurements on telephone lines or equipment it is necessary to terminate the line in a resistance approximately the same value as the characteristic impedance of the line. For all except loaded cables it is customary to use a resistance of 600 ohms for terminating purposes. This resistance may be connected directly across the terminals of the output power level indicator. It should be noted that no termination is required across the input (oscillator) end of the line as the impedance of the oscillator acts as a termination on this end.

When testing a circuit such as a rural or exchange line all receivers must be on the hook at the time the readings are taken, otherwise the readings will be in error.

Phantom circuits should be tested in the same manner as physical circuits with the exception that the test should be made from the drop side of the repeating coils. This will, of course, prevent making tests at other than terminating points of a phantom group.

In addition to transmission measurements of cable pairs and open-wire rural and toll circuits, power level indicators are very useful for checking the transmission loss of central office cord circuits, or for checking from line jacks to main frame. It is the experience of many companies that a surprisingly large amount of trouble will be found the first time a check is made of central office equipment losses. Such trouble is doubly harmful when it occurs in central office equipment as compared to outside circuit trouble, for much of the central office equipment is common to all of the subscribers; hence a high transmission loss in a single cord circuit will affect the service of a large number of subscribers.

Another use of the power level indicator is the checking of the volume efficiency of magneto or common battery telephones by means of a simple talking test. Fig. 4 illustrates the connections in making this test. It will be noted that the power level indicator is simply connected across the telephone to be tested. The test word or numbers, such as "hello," or "three-six-eight," are then repeated and the maximum deflection of the indicator needle noted. A little experience with this method will enable the tester to readily detect poor transmitters, errors in subscriber set wiring, etc.

In checking the output of common battery subscriber sets it will be seen from Fig. 4 that it is necessary to place a



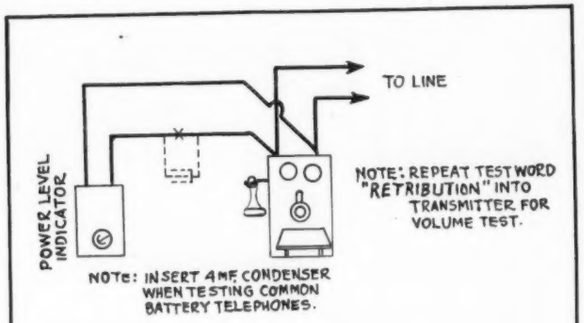

TO LINE
POWER LEVEL INDICATOR
NOTE: REPEAT TEST WORD "RETRIBUTION" INTO TRANSMITTER FOR VOLUME TEST.
NOTE: INSERT 4 MF CONDENSER WHEN TESTING COMMON BATTERY TELEPHONES.

FIG. 4. USE OF POWER LEVEL INDICATOR FOR CHECKING VOLUME OF EFFICIENCY OF SUBSCRIBERS' INSTRUMENTS.

condenser in series with the power level indicator in order to keep the central office battery from operating the meter.

Another use of the power level indicator is the checking of the power output of radio sets and public address amplifiers. For this type of work, the power level indicator should have a maximum range of at least + 36 dbs. This range will permit measuring the power output of audio amplifiers up to 24 watts.

In checking the power output of radio sets the level indicator should be connected directly across the voice coil of the dynamic speaker and the power output in decibels determined by applying the proper correction factor, assuming the impedance of the voice coil to be approximately 16 ohms.

In using the power level indicator on public address systems as a volume indicator, it should be connected across either one of the speakers or directly across the output winding of the power amplifier.

In cases where program material is picked up and amplified and then fed into a cable or open-wire toll circuit for transmittal to some remote point, the power level indicator is useful for limiting the maximum power level fed into the cable, for crosstalk is liable to take place where the power level is much in excess of + 6 dbs. The instrument should be connected directly across the input pair and the amplifier adjusted so that the power level indicator does not indicate a greater level than some predetermined value.

In connection with the transmission of programs over telephone toll circuits or exchange cables, it is also necessary to see that the power level does not fall below a prescribed minimum in order to minimize the effects of noise and crosstalk, which are present on any circuit to some degree. A power level of not less than + 2.0 dbs. is generally recommended.

## Summary of Commission Rulings and Schedule of Hearings

CALIFORNIA.

October 26: The Pacific Telephone & Telegraph Co. authorized to increase rates at its exchange in Aptos, Santa Cruz county, in connection with increasing the hours of service rendered at the exchange to a continuous 24-hour per day service.

November 4: The Reedley Telephone Co., Fowler Telephone Co., Lindsay Home Telephone & Telegraph Co., Magnolia Farmers Telephone Co. and Associated Telephone Co., Ltd., filed a joint application in which the four first-named companies ask authority to transfer all their properties, franchises and rights to the Associated Telephone Co., Ltd. The application asks that the local companies be permitted to cease public utility operations, and that the Associated Telephone Co., Ltd., be allowed to enter the territory now served by them.

KANSAS.

November 15: Hearing in Hutchinson on investigation of the rates, joint rates, tolls, charges, classifications, regulations, practices, sets and service of the Southwestern Bell Telephone Co. engaged in the transmission of messages, sale or rendering of telephone service for hire to all classes and kinds of customers and subscribers for any and all purposes, including any and all things and matters relative thereto in the state of Kansas; this being investigation of the Hutchinson exchange, part "C."

November 17: Hearing in Independence on complaint of certain telephone subscribers of Independence vs. The Southwestern Bell Telephone Co.

November 22: Hearing in Hiawatha on complaint of C. H. Barrand, T. G. John, L. N. Morgan, Everett Hopp and J. F. LaCroix, of Hiawatha vs. The American Telephone Co. of Abilene.

November 29: Hearing in Emmett on complaint of certain telephone subscribers at Emmett vs. The Western Telephone Corp.

November 30: Hearing in Beloit on complaint of certain telephone subscribers of Beloit vs. The United Telephone Co.

LOUISIANA.

October 25: Petition filed asking an investigation of telephone rates and charges in Shreveport and vicinity.

The petition, directed against the Southern Bell Telephone & Telegraph Co., asserted that telephone rates in Shreveport were "excessive, exorbitant and unreasonable and worked hardship on patrons, and should be decreased to a fair amount." There are more than 17,000 telephone subscribers in and around Shreveport, it was stated.

The claim was made that if the telephone rates and charges were based on any appraisements and investment returns, they were "excessive under present conditions." The petition also asserted that the telephone service is inferior, and that removal and installation charges are unreasonable.

MASSACHUSETTS.

November 17: Hearing continued from November 2 in state house in Boston on complaint of the Boston Central Labor Union and other petitioning customers against the New England Telephone & Telegraph Co.

MINNESOTA.

November 28: Hearing in Caledonia at 2:00 p. m. in the city hall on the application of F. A. Groezinger, mayor of the village of Caledonia, requesting a reduction in rates charged by the Tri-State Telephone & Telegraph Co. for service at Caledonia.

MISSOURI.

October 24: Complaint filed by the commission against the United Telephone Co.'s rates for service in Clinton.

October 26: Complaint filed by Chas. W. Schroeder, et al. versus the Southwestern Bell Telephone Co. requesting reduced rates at Manchester.

October 31: Hearing on joint application of the Citizens Public Service Co. of Missouri to sell certain telephone properties in the counties of Osage, Maries, Crawford, Gasconade, Washington and Franklin and P. K. Higgins to purchase and operate these properties.

November 3: Approval granted joint application of the Citizens Public Service Co. of Missouri to sell certain telephone properties in the counties of Osage, Maries, Crawford, Gasconade, Washington and Franklin, and of P. Kerr Higgins to purchase and operate the properties.

NEW YORK.

November 23: Hearing in New York City on extra monthly charge of 25 cents by the New York Telephone Co. for handset telephones, the city affairs committee of New York, claiming it excessive. Hearing continued to this date from November 2.

NORTH DAKOTA.

October 13: Approval granted Upham Telephone & Electric Co.'s reduced schedule of rural telephone rates, applicable until June 1, 1933, at Upham.

October 22: Approval granted Deering Telephone Co.'s reduced schedule of telephone rates for Deering.

October 22: Authority granted the Northwestern Bell Telephone Co. to install a toll station at Appam.

October 22: Approval granted the Northwestern Bell Telephone Co.'s application for authority to discontinue its public toll station at Werner.

OKLAHOMA.

October 27: Standard Telephone & Telegraph Co. ordered to install a common battery telephone system in Skitook to replace the magneto system now in use.

December 5: Hearing to be resumed in investigation of rates and toll charges of the Southwestern Bell Telephone Co.

WISCONSIN.

November 4: Order issued reducing rural rates of the Midway Telephone Co., which operates in Taylor county, and criticizing the company for its non-cooperative attitude which delayed its decision.

Complaint that the rates were unreasonable was made last March by approximately 200 rural subscribers but the company declined to offer any defense, contending that the farmers had not made a case against it by their informal presentations.

Robert M. Rieser, company counsel, argued that until the farmers or the commission offered testimony to prove that the rates were too high, the mere complaint that they were, put the telephone company under no obligation to defend that charge.

Pointing out also that it had in its files the company's annual reports to the commission, the order stated that it has long been common practice to rely upon these sworn reports when competent evidence to the contrary is not offered or available, and proceeded to require reduction of the rates in question.

WB
Telephone Wire
RUBBER COVERED
COPPERWELD • BRONZE • COPPER
DROP • INSIDE AND BRIDLE
Made by Specialists
Trained over many years in the manufacture and development of telephone wires designed to successfully meet the most rigid requirements of the telephone industry. Used by leading telephone companies everywhere.
MANUFACTURED BY
The Whitney Blake Co.
DISTRIBUTED IN U.S.A. BY
Graybar
ELECTRIC COMPANY
OFFICES IN 76 CITIES
FOREIGN DISTRIBUTORS International Standard Electric Corporation 67 Broad St., N. Y. City.

J. K. JOHNSTON
TELEPHONE
JK
ENGINEER
INDIANAPOLIS

During recent years I have been privileged to appraise Telephone Exchanges all over the United States. The list totals 750. Would you like to avail yourself of my services?

1038-9 Lemcke Building

**Frank F. Fowle & Co.**
Electrical and Mechanical
ENGINEERS
221 North La Salle St. CHICAGO

**CONSULTING**
Telephone Engineer
GARRISON BABCOCK
20 East Jackson Boulevard, Chicago
Suite 800. Telephone Harrison 7490

**METCALF & RICHARDS, Inc.**
*ENGINEERS*
APPRAISALS REPORTS
FIXED CAPITAL RECORDS
VALUATION DEPRECIATION
Liberty Trust Bldg., Philadelphia, Pa.

**Consulting Telephone Engineers**
W. C. POLK — J. W. WOPAT
Plans, Estimates and Reports,
Appraisals and Supervision
100 W. Monroe St. Chicago, Ill.

**ACCOUNTING**
HERDRICH AND BOGGS
Certified Public Accountants
Specializing in Telephone Accounting
and Rate Cases Since 1918
901-7 Continental Bank Bldg.
Indianapolis, Indiana

**COFFEY SYSTEM**
Exclusive Telephone Accountants
CERTIFIED
Systems Installed
Audits and Special Services
CENTRAL ACCOUNTING DEPARTMENT
Consolidated Bldg., Indianapolis

**CONSULTING TELEPHONE ENGINEERS**
Rates Financing Accounting Managing
Appraisals and Reports
Radio Program Service Specialists
Construction Contractors
TELEPHONE ENGINEERING AND
MANAGEMENT COMPANY
Lima, Ohio

**J. G. WRAY & CO.**
Telephone Engineers
Specialists in Appraisals, Rate Surveys, Financial Investigations, Organization, and Operation of Telephone Companies.
J. G. Wray, Fellow A. I. E. E.
Cyrus G. Hill
2626 Bankers Bldg., Chicago

# Condensed Telephone News

Companies Are Urgently Requested to Forward to Us Promptly News Concerning Construction, Rebuilding, Financing, Election of Officers, Sales and Purchases of Exchanges or Other Activities

## New Telephone Companies and New Incorporations

DOVER, DEL.—The name of the Telephone Management Corporation has been changed to Telephone & General Syndicate, Inc., Chicago, Ill.

BOTHELL, WASH.—The Bothell Telephone Co., having a capital stock of $50,000, has filed articles of incorporation increasing its capital stock to $200,000.

## Construction

SANBORN, MINN.—The Minnesota Union Telephone Co. is removing the telephone poles here and placing the wires in conduit underground.

WEST UNION, OHIO.—The West Union telephone exchange of the Ohio Standard Telephone Co. is now housed in larger quarters. A new switchboard was installed in the new office of the company.

PHILADELPHIA, PA.—Directors of the Bell Telephone Co. of Pennsylvania have approved appropriations totaling $1,110,086 for new equipment, essential replacements and maintenance throughout the state in the near future. The appropriations brought the total set aside for these purposes thus far this year to $14,508,049.

The directors of the Diamond State (Delaware) Telephone Co. appropriated $10,000 for similar work in Delaware.

PITTSBURGH, PA.—Work will be started immediately on an addition to the Hazel exchange of the Bell Telephone Co. of Pennsylvania which ultimately will cost $1,300,000, Frank J. Chesterman, vice-president in charge of the western Pennsylvania area, announced recently. The project includes an $180,000 addition to the company's present building and the installation of more than $970,000 worth of dial system equipment in the new building.

Also, $150,000 will be spent in replacing the present non-dial telephones in the homes and business establishments of the district, it is expected. The new addition probably will be finished by next May and the dial equipment will be installed at that time. The area served from the Hazel office is expected to be completely mechanized by 1934.

CANISTOTA, S. D.—Engineers of the Dakota Central Telephone Co. of Aberdeen, have been making plans for the rebuilding of the telephone plant in Canistota. It is expected that the work will start in the near future and it is planned to place about 4,300 feet of additional cable and place new wires at the subscribers' premises. The proposed plan will eliminate 80 poles and all wire from the streets. It is estimated that the work will cost about $4,000.

## Elections.

BRIGHTON, IOWA.—At the annual meeting of the stockholders of the Brighton Mutual Telephone Co. the officers elected for the coming year are: President, Grant Horton; vice-president, Otto Fritz; secretary-treasurer, Roy Hinson; manager, K. M. Elmore; directors for a term of three years, Alex Schlarbaum, W. W. Jamison, A. E. Horton and Taylor Stout; director for a term of one year, to fill vacancy, William Craff.

ELKADER, IOWA.—The annual meeting of the stockholders of the Clayton County Farmers Mutual Telephone Co. was held recently in the office of Secretary Thomas Thomsen, at which time routine business was transacted and officers elected for the coming year.

Art Buckman of Garnavillo was named president; Fred Kuehl, vice-president; William Baars, treasurer; Thomas Thomsen, secretary; Louis Hulverson, manager, and Mr. Kuehle, Mr. Baars and Mr. Hulverson as members of the executive committee.

GREENFIELD, IOWA.—At the annual meeting of the stockholders of the Lincoln Mutual Telephone Co. no change was made in the officers. L. S. Roberts, of Greenfield, was reelected president; Harry McKee, of Stuart, vice-president; W. R. Goodman, treasurer, and E. W. Vandewater, secretary. Directors: John Ehm, Fontanelle; Andrew Lawson, Stuart; Henry Vandewater, Greenfield.

WALNUT, IOWA.—At the annual meeting of the stockholders of the Walnut Telephone Co. the following officers were elected for the coming year: J. A. Schuttloffel, president; A. M. Jacobsen, vice-president; Otto Matthies, secretary; Henry Rossman, treasurer. Mr. Schuttloffel has been president of this company for 16 years.

KIDDER, MO.—At the annual meeting of The Home Mutual Telephone Co. of Caldwell County nine directors were elected and the board was organized.

Clarence Bacon is president of the company; Jesse Ream, vice-president; Homer F. Powell, treasurer, and Elmer E. Alden, secretary. The other directors are Mrs. Ida Peters, J. Vern DeWalt, H. O. McKee, H. C. Vallandigham, and J. I. McDonald.

## Miscellaneous

ERIE, ILL.—Kirk S. Thompson, manager and telephone operator of the local exchange of the Crescent Telephone Co., was recently the subject of one of John Hix' "Strange As It Seems" cartoons, in recognition of his having been a telephone operator at Erie for 30 years although totally blind. Mr. Hix' comment follows:

"Kirk S. Thompson, manager and telephone operator of the Crescent Telephone Co. of Erie, Ill., has been totally blind since he was 20 years of age. He is now 63 and has been on the job for 30 years, using an especially constructed switchboard on which the lights are supplanted by the Braille system. . . . For a number of years he handled all the calls himself, but now has a girl operator working on the opposite shift."

MASCOUTAH, ILL. — The Looking-Glass Prairie Telephone Co. has purchased a residence in New Baden for the sum of $900.00. The company intends to move its exchange from the house of Mrs. Clara Mueller, just across the street, where it has been located ever since the line was built to New Baden, into the rear room of the building purchased. The family now living in the building will continue their residence in the remaining rooms of the house.

VERMILION, OHIO.—Vermilion village has secured an injunction temporarily restraining the Lorain Telephone Co. from transfering operation of Vermilion's long distance service to Lorain. This transfer, it is claimed, will throw the present operating force out of work. Local service is now under dial operation.